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1 May 1985

USSR Report

TRANSPORTATION

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REPUBLIC MINISTERS ON MOTOR VEHICLE TRANSPORT PERFORMANCE

Report of UzSSR Minister

Moscow AVTOMOBIL'NYY TRANSPORT in Russian No 11, Nov 84 pp 4-6

[Excerpts from article by UzSSR Motor Transport Minister A. Gavrilov: "In the Fraternal Family of Nations"]

[Excerpts] Right now, there is not a single sector in our republic which does not need the services of motor vehicle transport. Industrial and civil construction, the installation of major irrigation and drainage systems, virgin lands development, public and passenger transport services--all these form a far-from-complete list of the operations which occupy motor transport workers these days.

If, the year the republic was founded, we had a total of 223 motor vehicles, and the first bus route was begun two years later, then in Uzbekistan at present motor vehicle transport workers haul over 90 percent of the freight and transport 83.7 percent of the passengers.

Collectives of UzSSR Minavtotrans [Ministry of Motor Vehicle Transport] enterprises have rendered a great deal of assistance to agricultural workers in working out the Food Program. Enterprise collectives are handling freight and passenger transport, and the public transportation services for the rural population in all regions of the republic. General-purpose motor vehicle transport hauls over 70 percent of our agricultural output.

In time of harvest, the ministry makes 2,500 vehicles available. Last year 3.3 million tons of raw cotton, 1.8 million tons of cottonseed, 2.5 million tons of fruit and vegetable produce and melon crops, and over 1.2 million tons of grain crops.

For three years of the five-year plan period, the ministry has fulfilled the plan for hauling freight and transporting passengers ahead of schedule. Fifteen million tons of freight were hauled, and 91 million passengers transported above the set plan, R2.2 million worth of commercial output were sold, and R330,000 worth of public transport services were rendered to the population.

Over 900 drivers fulfilled their individual five-year plan assignments, and are at work on the 1986-1987 accountings.

It has been possible to achieve these indicators thanks to the introduction of scientific and technical achievements, and the scientific organization of labor, as well as consolidation of the material-technical base, and the development of competition and progressive work forms and methods.

Since the beginning of the five-year plan, the ministry has handled R250 million in capital investments for the development and consolidation of the enterprises' production and technical base. Through the use of these assets, vehicle freight and passenger motor transport enterprises with 800 machine-spaces were built and put into operation, as well as five service stations, two special-purpose motor vehicle enterprises for public transportation service, and production buildings and sectors in many operating enterprises. We are giving a great amount of attention to mechanizing labor-intensive processes. Forty-seven vehicle-washing installations have been put into operation, and more than 20 tire-dismounting bays, 30 motor vehicle diagnostics stations and 200 various stations and bays for the disassembly and repair of assemblies. All these have permitted a 65 percent increase in the level of mechanization of labor for repair workers in vehicle washing and harvesting operations, up to 66 percent increase in lubricating operations, and up to 64.4 percent for tire-mounting operations.

A flow-type engine-assembly line and an automatic cylinder block machining line for ZMZ-53 engines, a test stand for the TAS-32M four-stage hydraulically operated hoist, and a manipulator for dismantling the assembly stand and installing frames on the assembly line conveyer have all been introduced in the sector's industrial enterprises. A method for repairing assemblies, machine sets and components, using furan-epoxy resins, is being widely used. This not only permits an improvement in the quality of motor vehicle repair, but also a reduction in the length of time the vehicles stay in the repair area, and a reduction in labor and material outlays.

We are doing a lot of work in the area of economizing our fuel-power resources and replacing traditional fuels with newer ones. The combined measures which have been taken in the sector's motor vehicle enterprises for the rational use and conservation of motor vehicle fuel have saved 35,500 tons of gasoline, and 12,400 tons of diesel fuel. At present in the republic there are vehicles being run on compressed gas, and in Tashkent, Bukhara and Chirchik there are a large number of trucks and buses which operate on gas-condensate fuel. In Tashkent they have organized an experimental motor vehicle transport enterprise for taxis which operate on compressed gas.

Along with the development and improvement of the production and technical base, we pay constant attention to the introduction of all new, state-of-the-art developments in motor vehicle transport into our transport process.

The most important trends in truck transport are the increased level of centralized haulage, close interaction with other modes of transport, and more widespread use of trailers, containers, packets and pallets.

At present, we have centralized 97 percent of our haulage in conjunction with Gossnab, Minstroymaterialov [Ministry of the Construction Materials Industry], Minelektroprom [USSR Ministry of the Electrical Engineering Industry], Mintyazhmash [Ministry of Heavy and Transport Machine Building] and other service ministries.

Last year we shipped 6.9 million tons of freight, or 7.8 percent more than in 1982, in containers and packets. To continue the development of progressive hauling methods, we are conducting competitions into the study of containerized freight volumes. As is being shown by practice, the operating efficiency of our rolling stock has been improved by using special-purpose containers for hauling sand, which are installed aboard the vehicle, and which are loaded along the way by the loading stations.

In order to distribute the freight rationally, we changed 125,000 tons of freight over from rail to motor transport. This made about 2,100 freight cars available.

In order to restrict no-load runs, the ministry is perfecting and developing a network of control and load-dispatching stations and freight terminals. Along the same lines, last year saw 423,000 vehicles loaded with an additional 3.6 million tons of freight hauled, no-load travel was reduced by 55.4 million miles, and 25,400 tons of fuel were saved.

The increase in vehicles' freight-carrying capacity and the use of articulated tractor trailer rigs and reversible semi-trailers are an important resource for increasing freight-hauling efficiency and the growth of labor productivity. The number of truck trailer trains in our enterprises grows from year to year and today we have over 6000 units. The economic effect derived from operating these units amounts to R3.5 million per year.

As we see it, much has been done. But along with the successes we have achieved we also have some shortcomings. For instance, we have enterprises which do not fulfill the plan for authorized clientele, and which show above-norm work stoppages of freight vehicles and a high level of highway transport accidents. We are quite familiar with all these faults, and are exerting all our efforts to eliminate them. However, at the same time, there also remain unresolved problems, which we cannot resolve using our own personnel. The value of capital production assets allocated for a single general-purpose motor transport vehicle is 2.5-fold lower than the standard. Equipment and mechanization device needs are 25-30 percent satisfied, the stock of machine tools in operation has been exhausted by more than half, and we are receiving insufficient numbers of trailers and semi-trailers, forcing the ministry to use its own resources to manufacture them.

Due to the limited capital investments alloted for motor vehicle transport, it is advisable to plan for a participatory share from other ministries and departments in measures taken for the modernization, rebuilding and construction of new motor vehicle repair enterprises in proportion to completed volumes of repair work.

And there are other problems which can only be solved through the joint efforts of the motor vehicle enterprise collectives of our ministry and service organizations. Up to now, 386 enterprises, and organizations of 32 ministries and departments who avail themselves of the services of general-purpose motor vehicle transport, have yet to introduce the new forms for commodity-goods transport documents, although they were approved as long ago as 1977. And this opens up a loophole for account padding and overexpenditures of fuel. Pace-setting growth in general-purpose motor vehicle transport and the concentration of transport equipment in the major motor-vehicle-using activities is an important resource for improving the sector's operational effectiveness. During the years of the 10th Five-Year Plan in our republic, the departmental transport truck fleet (going by total load-carrying capacity) grew by 34.5 percent, but general-purpose transport increased by only 27.7 percent.

This same tendency has been preserved during the 11th Five-Year Plan period, even though general-purpose motor vehicle transport operates more efficiently than does departmental. Having only 17 percent of the republic's total motor vehicle fleet at its disposal, general-purpose transport carries over 30 percent of the freight. The productivity of the trucks used in departmental motor vehicle transport is 2-fold lower than for those used in general-purpose transport, and the production costs for hauling are much higher.

In Uzbekistan in the summer, the ambient air temperature reaches 50° C. and higher, which, combined with the heated generated by an operating engine, creates extremely difficult conditions for the drivers. The only people who can solve this problem are the designers and motor vehicle builders who have been ordered to develop a southern variety of motor vehicle for all the Central Asian republics.

The maintenance system for KamAZ [Kama Motor Vehicle Works] vehicles have not yet been conclusively thought out. As a result, we have no base for repairing engines, gearboxes or other assemblies. The KamAZ motor vehicle center system does not meet the needs of the republic's motor vehicle enterprises, which means that a significant number of the vehicles are standing idle.

In our opinion, solving the problems under consideration here will help to improve the utilization of the rolling stock and the completion of the tasks set by the party for motor vehicle transport.

Report of KiSSR Minister

Moscow AVTOMOBIL'NYY TRANSPORT in Russian No 11, Nov 84 pp 10-11

[Article by KiSSR Minister of Motor Transport and Highways K. Orozaliyev: "Improving Motor Transport Operation"]

[Excerpts] Collectives of the enterprises and organizations of the republic ministry, together with workers from other sectors, are greeting the 60th anniversary of the founding of the Kirghiz SSR with new labor achievements. During the first half of this year the ministry successfully fulfilled the plan for transporting freight and passengers, for passenger turnover, for sales and output of commodity output, for provision of amenities for the populace, and for major and medium road repair.

In our republic, motor vehicle transport is essential for serving the national economy and the population with transport.

The Kirghiz SSR is a mountainous republic. Mountains occupy over 80 percent of its territory, with three-fourths of the territory situated at elevations of 1,500 meters and higher. The complicated topography of the locale places sharp strictures on the development of rail and river transport. In all, there are only 371 km of rail lines and 581 km of navigable rivers. In volume shipped, motor vehicle transport here holds first place, i.e., carries more freight than all the other modes of transport taken together. If, for the country as a whole, 82 percent of freight transport and over 71 percent of passenger transport is handled by motor vehicles, then in the KiSSR the portion of freight hauled by motor vehicle transport amounts to 97 percent and 99 percent of the passengers. The Central Committee of the Kirghiz Communist Party and the republic government keep their unswerving attention on the development of motor vehicle transport.

Centralized freight hauling gets a lot of attention from the ministry. During the first half-year, 83.7 percent of freight shipping was centralized, with an 84.7 percent freight turnover. These indicators are higher than for the corresponding period of last year. The method of shipping freight on pallets has increased markedly. In six months, over 140,000 tons of freight, or 40,000 tons more than in 1983, were shipped on pallets.

The ministry is conducting a major effort to eradicate account padding for non-completed work. Trustworthy workers from the ministry, from trusts, leading motor vehicle transport enterprises and administrations are making checks of the motor transport establishments for any account padding for unfinished transport work which might show up. For account padding and other violations, 14 motor depot, road construction and road operating workers who were found responsible were relieved of their positions, 198 persons were punished administratively, and legal proceedings against four workers were handed over to investigative agencies and to people's control committees.

The authenticity of the paperwork on completed volumes of work is checked regularly with organizations and enterprises. In 1983, 3,400 of these checks were made. For incorrectly drawing up commodity-transport documents and for account padding for unaccomplished work, the guilty parties are deprived of all bonuses and compensations for a period of up to a year, and in addition, the guilty parties are penalized in the amount of unlawfully obtained wages and for the value of fuel and lubricants they have written off.

12659
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MOTOR VEHICLES AND HIGHWAYS

NEW MODEL GAZ-24-10, 24-11 VOLGAS SERIES PRODUCTION IN 1985

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 12 Dec 84 p 4

[Article by SOTSIALISTICHESKAYA INDUSTRIYA correspondent V. Noskov, reporting on comments by M. Zybov, technical director of the GAZ [Gorkiy Motor Vehicle Works] Production Association: "What's It Like, the New Volga?"]

> [Text] There have been many announcements in the press and on the radio that in this five-year plan the Gorkiy Motor Vehicle Works is planning, instead of the Volga GAZ-24, to produce another passenger car, more powerful and comfortable. New cars bearing the trademark of this enterprise have appeared on the streets of the cities, but for some reason they are not for sale. Why? [signed] V. Kuznetsov, Tyumen
>
> At the request of V. Noskov, our correspondent, M. Zybov, technical director of the GAZ Production Association, responds to the reader's question.

Actually, our collective undertook to assimilate, in the current five-year plan, the production of a new model of passenger car that the plant's designers had created. The first batch of such vehicles of the GAZ-31-02 model came off the assembly conveyor three years ago.

The front and rear parts of the body are completely modified: the hood is lowered a little, and the trunk is raised--this creates a wedge-like silhouette and improves the wind shape of the vehicle. An essentially new brake system has been installed with separate linkage. The interior has been made significantly more comfortable. It is equipped with a more complete ventilation system, soft comfortable seats, radio-tape stereophonic sound and a radio receiver. The instrument panel is made of foam plastic. All this adds elegance to the passenger compartment and makes the driver's work easier.

For the first time on this type of vehicle they have installed a four-cylinder engine with precombustion chamber ignition and a capacity of more than 100 horsepower. Thanks to this it can achieve a speed of 150 kilometers per hour, and its gasoline consumption at this speed is significantly lower than that of the previous Volga. Distance logged prior to overhaul is increased to 350,000 kilometers.

Batch production of the new vehicles has been started now. There are already many of them on the streets of large cities. But mass production of the GAZ-31-02 is not foreseen. And in the long run such vehicles will be manufactured in limited quantities since they are intended only for official purposes, including display models.

Next year mass production of the new model Volga GAZ-24-10 will begin. It will be available for sale to the public and for work in organizations and institutions.

What kind of car is this? It has all the best things from the previous models GAZ-24 and GAZ-31-02. For example, from the latter model it has taken the doors, rear axle, brake system, tires and interior trim; the front suspension and body are from the GAZ-24. The rear window in the new Volga is heated, which allows the fan to be eliminated--in its place now is the spare tire, which frees space in the trunk. This car is more economical, reaches its maximum speed faster and requires less time for acceleration from a dead stop.

Simultaneously with this model, also next year, we will begin production of yet another model--the GAZ-24-11. This vehicle is designed especially for operation in the country's taxi fleets. On the outside it looks just like the GAZ-24-10. But it takes A-76 gasoline. The seats are covered not in fabric, but in a leather substitute. The hubcaps are not metal, but plastic. The brake system is separate--two-stage. This taxi will be a comfortable ride for both driver and passenger. Based on the results of tests, this vehicle has been awarded the state Emblem of Quality.

12461
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MOTOR VEHICLES AND HIGHWAYS

DETONATION HARDENING FOR ZIL MOTOR VEHICLE PARTS

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 10 Jan 85 p 1

[Article by V. Shvorina, NIITavtoprom [Scientific Research Institute of Motor Vehicle Industry Technology] information center correspondent: "Firing Cannons at Parts"]

[Text] Moscow--In a mechanical shop at the Moscow Motor Vehicle Unit Works, which is part of the ZIL [Moscow Motor Vehicle Works imeni Likhachev] Production Association, everything was ready for... explosions. In a few minutes the detonation complex would be put into operation and a gas cannon would begin continuous firing. The target of the fire--motor vehicle parts.

What kinds of strange things are going on in the shop? Indeed, in the usual sense an explosion is continuous destruction. And the purpose of this industry is altogether different--creation.

Ye. Brakov, deputy general director of the association, informs me, "A technological process is being developed here that is absolutely unique and non-traditional for the motor vehicle industry. Really, there will be both explosions and genuine firing... Only they will not destroy anything, on the contrary, they will strengthen and make motor vehicle parts many times more durable. As you see, the explosion now has a new role."

ZIL struggled for many years with the solution of a complex and burning technical problem--increasing the life-span of domestic motor vehicle parts. For example, the case for the water-pump bearings failed sooner than the majority of other assemblies, especially in steppe and desert conditions. On normal roads it held up for 150-170,000 kilometers, but in steppe or desert roadless conditions its "endurance" was cut in half. Meanwhile, it was demanded that the life of the case be extended to 350-400,000 kilometers, in any conditions.

The problem was successfully solved with the help of NIITavtoprom scientists, headed by Yu. Fed'ko, candidate of technical sciences. For this it was necessary to tame the explosion. Started by means of an electrical discharge, it occurs in the barrel of the gas cannon. Melted particles of a powder designed for spraying fly out of the barrel, cut into the part and coat it with a dense layer. The strengthening covering is ready.

Inexpensive and accessible powdered materials are used for it, for example, alumina, which is very important for mass production. Also important is that the coating stays on the part without the preliminary application of a precoat of critical materials based on nickel and molybdenum. It is suitable not only for cast-iron parts, but for ceramic ones and those manufactured from light-weight alloys or aluminum. And the replacement of iron casting with aluminum casting is a radical means of reducing the mass of designs and easing working conditions in the casting industry. It is, finally, economy of material and labor resources.

Tests have shown that the life-span of motor vehicle assemblies hardened with detonation spraying is increased more than five-fold. After 300,000 kilometers there was virtually no deterioration observed in the case for the water-pump bearings, and this is one of the assemblies that especially worried the operating staff before. Moreover, it inhibits corrosion of the iron. Thus, the economic effect of hardening this single part of the ZIL-130 comprises 517,000 rubles per year.

This comparatively small sector is also the workplace of the "Corundum", as the scientists called the installation. The gas cannon is covered in a metallic noise-suppressing housing. And the only sign that somewhere inside the explosions are conscientiously doing their peaceful work, prolonging the life of parts, are the frequent (three shots per second) remote blasts.

"The hardening complex was to occupy a minimum of space and be reliable and safe," says Yu. Fed'ko. "Without any capital construction, we were required to set up a ground-type installation which, put into the technological flow, would not disturb the established production scheme."

The combustible gases used in the unit are not dangerous for the adjuster and the operator. Their pressure is reduced. Precisely for these reasons, Corundum can be built into the flow. Purification works have been foreseen also--the air at the unit is fresh.

The almost soundless cannon fires without stopping. Every minute two parts are hardened.

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MOTOR VEHICLES AND HIGHWAYS

MORE COMPRESSED GAS FILLING STATIONS URGED FOR MOSCOW

Moscow IZVESTIYA in Russian 9 Jan 85 p 6

[Article by V. Belikov: "Fill Your Vehicle with Compressed Gas"]

[Text] The Mossovet ispolkom examined the question of speeding up the construction of motor vehicle compressed gas filling stations (AGNKS) in Moscow.

Everybody is daily convinced in his own kitchen of the fact that natural gas burns cleaner than any other type of fuel--the blue flame gives off virtually no odor, no smoke and no other unpleasant "exhaust", which one unfortunately cannot say about gasoline, solar energy or oil. These types of fuel have already begun to be partially supplanted in the motor vehicle fleets of Moscow--in the capital, as was noted at a session of the presidium of the Mossovet ispolkom, there are hundreds of trucks and dozens of passenger cars operating on compressed natural gas.

"Still more of these vehicles, saving liquid fuel and not polluting the capital's air supply, will appear after the commissioning this year of three AGNKSs currently under construction," reports V. Mikhaylov, chief of the Soyuzgazprom VPO [expansion unknown]. "As you know, right now in Moscow stations are operating near the ring road--on Kashirskiy Shosse and in Ochakov and Beskudniki. In the future there will be eight of them in Moscow, and in the country as a whole, the construction of almost a thousand compressed gas filling stations for motor vehicle transport is planned."

The figures show that by this time the fleet of specially equipped motor vehicles in the Soviet Union will have reached one million trucks and passenger cars. The conversion of them to natural gas will permit a savings of eight million tons of gasoline annually.

"In the name of the stations being built there is the word 'compressed'. Obviously, it must be more complicated to equip them than ordinary filling stations?"

"Much more complicated! The gas must be purified beforehand, compressed to 250 atmospheres and dehumidified in order to be injected under such pressure into the steel cylinders that are installed on the chassis of the vehicle. One fill-up suffices for 230-250 kilometers."

Incidentally, the development by Soviet designers of a system that "feeds" fuel to the engine allows the use of both compressed gas and ordinary liquid fuel. To do this, the driver has only to switch one valve.

In order to organize a network of filling stations, noted V. Mikhaylov, it is necessary to develop and begin production of an entire family of compressors calculated for various gas pressures. The technical demands transmitted to Minkhimmash stipulate the potential of manufacturing this equipment in the so-called block-container version, which is convenient for fast, high-quality assembly anywhere.

12461
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MOTOR VEHICLES AND HIGHWAYS

BRIEFS

COMPLETED CONSTRUCTION IN TASHKENT--(UzTAG)--The construction collectives building the Tashkent Engine Plant prepared a good New Year's gift: the production block, with an area of 27,000 square meters, was erected much earlier than the projected time. The administrative and living blocks of other projects are ready. [Text] [Tashkent PRAVDA VOSTOKA in Russian 1 Jan 85 p 3] 12461

KAMAZ REPAIR FACILITY COMPLETE--Tselinograd, 3 [Jan]--The first shift of the new year at the newly built regional motor vehicle center for KamAZ coincided with the rotation of equipment. Soon the first motor vehicles will arrive here for a "cure". The new enterprise, the main block of which occupies nine hectares, will service up to 30,000 KamAZs annually from various oblasts of Kazakhstan and the Russian Federation. Repair of assemblies and units and their guarantee maintenance are included in the function of the motor vehicle center. [By Ye. Zaytsev, PRAVDA correspondent] [Text] [Moscow PRAVDA in Russian 4 Jan 85 p 1] 12461

GAS FILLING STATIONS OPERATIONAL--Orenburg--A gas filling station for trucks began to operate in the city at the new year. Construction of a second such filling station will begin in the near future in the oblast center, and in the future they will appear also in Orsk, Buzuluk, Abdulino and several other cities of the oblast. The use of gas will help save gasoline. [By I. Gavrilenko] [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 12 Jan 85 p 1] Kharkov--The conversion of motor vehicle transport to an economical and ecologically clean type of fuel has begun in Kharkov. The oblast's first gas filling compressor station was put into operation here yesterday. It is designed to service 500 vehicles per 24-hour period. The mass conversion of motor vehicle transport in a large industrial center to this type of fuel is profitable in all respects. One gas vehicle saves up to three tons of gasoline annually, and the city's air supply will become cleaner. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 13 Jan 85 p 1] 12461

PRESSING PLANT FOR BELAZ--Zhodino, Minsk Oblast--On the outskirts of Zhodino, near BelAZ [Belorussian Motor Vehicle Works], a block of a new enterprise has been put up--a forge plant for heavy pressing. A large quantity of the pressing and forging necessary to the Belorussian motor vehicle builders is supplied from dozens of the country's cities. This influences the cost of motor vehicles, and from time to time delays the growth of their production. Now most of the production needed by the motor vehicle builders will be done by the new plant, which will be included in the BelavtoMAZ Association. The first stage of the forge plant

was put into operation a year ago. Now the specialists of the Minsktekhmontazh trust of the BSSR Minmontazhspetsstroy have put the second stage of the plant into operation. When the enterprise reaches its projected capability, 118,000 tons of parts for Belorussian motor vehicles will be produced here annually. [By A. Rivkin] [Text] [Moscow IZVESTIYA in Russian 14 Jan 85 p 1] 12461

NEW MINSK MOTORCYCLE--Minsk--The Minsk Motorbike Works has begun production of a new street bike. Its external appearance, unlike the previous model, has been improved. All the parts appearing on the outside have been "concealed" and the vehicle has a modern streamlined form. Electronic ignition allows the motorcycle to be started with half a revolution. Increased capacity headlights increase the safety of travelling at night. This year the Minsk plant will begin the production of a "rural" motorcycle. It will be more powerful and more durable, with wide tires, which will help it get over almost impassable sections of road. [By N. Kernoga, SOTSIALISTICHESKAYA INDUSTRIYA correspondent] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 22 Jan 85 p 4] 12461

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RAIL SYSTEMS

PROBLEMS IN WINTER RAIL SHIPMENT OF FODDER

Moscow GUDOK in Russian 11 Jan 85 p 1

[Unsigned article: "Speed up the Delivery of Fodder"]

[Text] There are no goods of secondary importance for railroaders. Everything needed by the national economy and the population is to be hauled on time and without losses. Nevertheless, there are times where some freight requires special and more attentive concern. Now, in addition to the ordinary assortment, this means fodder needed for livestock during the winter.

"The delivery of coarse fodder has a sizeable share in these transportation operations," said N. Kornyushin, deputy chief of the Department for the Transportation of Agricultural Freight of the Administration for Ensuring Proper Loading of the Railway Traffic Main Administration, told our reporter, "unfortunately the situation here is not favorable. The schedules for dispatching coarse fodders are being broken both by railroaders and shippers. We are especially concerned about the Baltic, Belorussian and Kuybyshev Railroads. Because of incomplete supply of rolling stock in the fourth quarter of last year, about 10,000 cars were not dispatched from here, and shippers were responsible for even more--46,400.

It was planned to move 265,000 cars full of coarse fodder on the railway network to assure the reliable wintering of livestock. The Ministry of Railways and the USSR Ministry of Agriculture have jointly engaged in a detailed reexamination and correction of this plan. Managers of railroads, republic ministries, kray and oblast agricultural administrations have the following tasks: the punctual and complete supply of cars for loading coarse fodder, complete utilization of rolling stock allocated, and, equally important, organization of continuous loading. How is this turning out? In October-December, in Volgograd Oblast alone, served by the Volgograd Division of the Volga Railroad, 3,900 cars were not released on time. The problem is posed as follows: first of all, deliver the necessary amounts of fodder to farms in the oblast. Likewise for Voronezh Oblast. Closest attention must be paid to unloading.

As far as dispatching is concerned, railroads have been given the authorization to use even cars of marginal suitability: boxcars, two-deck auto hauling cars, and gondolas going out for distribution to haul coarse

fodder. Coarse fodder is dispatched on limited routes. The Ministry of Railways inspectors/dispatchers have organized around-the-clock control over the movement of this freight which is so important now.

In short, everything is being done to correct the situation.

11574
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RAIL SYSTEMS

COAL UNLOADING PROBLEMS AT EKIBASTUZ GRES-1

Moscow GUDOK in Russian 19 Dec 84 p 1

[Article by GUDOK correspondent L. Turov: "Consists are Standing in Front of the GRES"]

[Text] Because of an inability to organize the prompt unloading of fuel, in the past 11 months 4,667 gondolas have been irretrievably lost at the Ekibastuz GRES-1 (Director, V. Shnayder), the country's largest. What are the station's managers doing to correct the situation? One can judge by the results: in the first 11 days of December alone, the rolling stock losses reached a record--2,470. Instead of the normed 6 hours, it has been taking 14.1 hours to unload a coal train here.

References are made to two power units going out of order, sharply reducing fuel requirements. Investigation of why the power engineering workers got in this situation is a matter for competent organs. Railroad workers are uneasily asking another question: what bells will the GRES managers ring when the power units are repaired? According to V. Shnayder, this will be in January. How does comrade Shnayder plan to keep warm then? Using the coal reject orders which have accumulated during the year? There are indeed many of them and the pile is growing larger every day. On 5 December alone, for example, the power engineers rejected 8 out of 10 trains. However, the problem here is more serious. GRES managers have shown total inconsistency in managing transport and storage operations. V. Mayfet, deputy chief engineer at the electric power station, is responsible for this area of work. We do not know when and to whom he has been answering for his work, but it is obvious that he has made a mess of it.

The technical condition of the railroad shop at the Ekibastuz GRES-1 is depressing, but with the onset of winter, for which the power engineering workers have not prepared, it literally came to border on an emergency. Unloading equipment is systematically breaking down because of malfunctions in the system for supplying water to the car dumpers. This causes the coal to freeze. Only one of the seven diesel locomotives at the GRES is in operation, while another two had to be rented from the Yermentau Depot.

There are gross violations of operating rules on sidings. So far this year, 28 gondolas have been severely damaged. Massive derailments have been caused by 7 broken switches, the central signaling system has been practically inoperative for 406 hours. A. Stepura, the Ekibastuz-Severnyy station chief, reports that the work of switcher locomotives at car dumps is not coordinated with the switch and signal center. Therefore, there is often conflicting traffic, leading to rolling stock collisions. There have been cases of direct non-fulfillment by GRES transportation workers of orders made by station duty officers S. Rakiyerov, A. Lyutovaya and K. Makhambetov. They are working on nerves, they say. The entire cycle of delivering coal for unloading is being slowed down.

R. Meftakhov, Ekibastuz-Glavnyy station chief, reckons that if power engineering workers are unable to carry out their transportation operations, then these operations should be completely transferred to Ekibastuz-Severnyy. This possibly deserves consideration, but not at this time. The GRES managers should now immediately and with all responsibility put their tracks in order. Things cannot get any worse.

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RAIL SYSTEMS

FUNDAMENTAL CAUSES OF RAILCAR DEMURRAGE; COOPERATION NEEDED

Moscow PRAVDA in Russian 14 Jan 85 p 2

[Article by Vitaliy Cherkasov: "Plant Railroads: An Economic Survey"]

[Text] The train rumbled over the switch, and this signified that we have crossed from the realm of one ministry--the USSR Ministry of Railways--into the domain of another --the USSR Ministry of Ferrous Metallurgy. Here also the track got a bit worse, and the roadbed sagged somehow.

The switch here is not merely a juncture of the rails but a strictly defined boundary between two departments, between mainline and siding tracks. But, of course, it is precisely on the siding tracks that more than 80 percent of all loading-and-unloading operations are now carried out. But the losses also are great at these junctions because of a lack of coordination and poor operational organization.

In Two Roles

Movement of freight, as K. Marx noted in his own time, is not a preconceived, useful effect but rather a necessary evil. And so, it is natural to strive to achieve a minimization of this evil.

Take, for example, this selfsame industrial transport. It performs, as it were, a kind of dual role. Juridically speaking, in its composition as well as its ownership of fixed capital assets and labor resources, it is an organic part of industry, since it performs for the latter the technological movement of raw materials, other materials, and semi-finished goods. Together with this, it is the beginning and the end of the country's rail system.

But just how is the quality of transport service within an enterprise defined? How is it to be evaluated? First, by the performance of the so-called contact schedules. And, then, if we want to put it more simply, by the railcar turnover norms of the Ministry of Railways. And it is precisely here, perhaps, where the "battlefield" is located between industrial railroad transport and its mainline colleague.

The Ministry of Railways regrets that the cars are standing idle for an excess of the normative time on the tracks of industrial enterprises. Yes, such things do happen. Nevertheless, in our opinion, this is not the main reason for the shortage of railcars. By tradition, it is considered that the root of the non-fulfillment of the norms with regard to railcar demurrage is concealed within the lagging on the part of industrial transport. Of the funds allocated for developing such transport over the last 10 years, 1.5 billion rubles have remained "unassimilated." But even if this money were to be invested in this cause, even then, according to the computations of the economists, the effect would amount to only 80 million rubles. The results would simply be incommensurate with the outlays.

And the railroaders themselves, in placing their emphasis upon saving one hour of demurrage on the plant sidings, over the period of these 10 years have increased instead of decreased the turnover time of railcars. It is precisely because of this that freight now takes much longer to reach the customers. Primarily because of idle times en route. And so here, most likely, we must talk more about the need to retool the mainlines as rapidly as possible. And, of course, about better reciprocal actions among departments which are involved, to one extent or another, in freight transport.

Extending to members of the transport infra-structure as well as to industrial transport are the "Charter of the USSR's Railroads" and other documents, regulations, and instructions. The trouble is that these documents have often been drawn up in such a way as to prevent solutions from being reached in a comprehensive manner.

Here, for example, in Paragraph 83 of the "Charter of the USSR's Railroads" the following is written: "Track development, structures, and facilities of railroad sidings must ensure, in accordance with the volume of hauls, the uninterrupted loading and unloading of freight, switching operations, and the optimal utilization of railcars and locomotives." After making the rounds of many enterprises under the jurisdiction of the Ministry of Ferrous Metallurgy in the Ukraine, I have become convinced that the structures and facilities of plant sidings are now basically different from those which were in existence at the time when this charter was approved, i.e., two decades ago. They now comprise large-scale machine complexes, including railcar gravity dumpers, heavy-duty crane-loaders, and conveyor lines many kilometers in length. Nevertheless, railcar demurrage is increasing, and arising from this is the impression of a "lack of development" on the part of the consignee's management.

Moreover, as far back as 15 years ago a state commission of USSR Gosplan declared the following: "The value of the fixed capital belonging to industrial transport...considerably exceeds the value of similar facilities belonging to the mainline freight fronts...." And so the thesis concerning the "lack of development" is invalid because, since that time, the industrial-transport base has grown even stronger. In our opinion, the cause lies in something else--in the "red light" of narrow departmental interests.

"Our resources can and must be utilized with a large return on investment," says the chief of the transport administration of the Ukrainian SSR Ministry of Ferrous Metallurgy, V. Goncharenko. "But, in order to do this, we must

take every measure to strengthen cooperation between industrial and mainline transport. But so far only the Ministry of Railways has "dictated the music."

This question was also discussed three years ago at an All-Union conference. It was recommended that USSR Gosplan, in conjunction with the departments concerned, prepare proposals with regard to improving the legal and commercial forms of reciprocal action between transport and the enterprises, to revise, in the first place, those regulations which unilaterally accord the right to solve a dispute to any one side.

Throughout the world the best form of on-schedule delivery of large shipments of freight is considered to be express routing. Let's say, some rolled steel needs to be shipped from Krivorozhstal' to Armenia. What could be simpler? Get together a sufficient number of railcars, and run them as a single train to the specified destination. But nothing of the sort. Almost every day rolled steel of various structural forms arrives from the mills. Many customers in the republic are waiting for it, are waiting for it to arrive at various times and in various amounts. How should an express routing be made up to satisfy each customer?

Routing at a Dead-End Siding?

About 30 years ago the hauling of such bulk freight as ore, coal, and fluxes was organized according to the principle of direct routings. Trains were dispatched from the shippers' stations and arrived at the consignees' stations at specifically determined times. They ran on the schedule of passenger trains. But the present-day express routings are sometimes retained only to the next large station, and there they are "dispersed." Railcars are rolled down from switching humps and coupled to other trains. Time is lost, and a great deal of superfluous work is done. It sometimes happens that express trains which have been dispatched late arrive for unloading far ahead of those which had been dispatched ahead of them. The rhythm is broken. And so how can there fail but be idle times on the platforms used for unloading?

Is it not high time for the railroaders, by utilizing the powerful force of electronics, to put in order the arrival times and speeds for freight deliveries and, above all, those by express routings? We must utilize every railcar in a genuinely business-like manner, rather than turning it into some sort of an idol around which fierce departmental battles are waged, fines are accumulated, and there is a purposeless pouring of money from one state pocket to another.

At present the juridical, financial, and technical relations between the railroads and the enterprises are built upon agreements concluded, as a rule, on the basis of standardized technological processes (YeTP) for operating stations and sidings. Serving as key documents here are the "Directives for Working Out Standardized Technological Processes for the Operation of Railroad Tracks and Stations Adjoining the Jurisdiction of the Ministry of Railways" and the "Regulations for Operating Railroad Sidings." Specialists have asserted the following: these documents no longer meet the principal requirement--a growth in the economic effectiveness of the enterprises' work.

In order not to break the chain "industry--industrial railroad transport--mainline transport," we must change the very concept upon which the relations between the two sides are built and bring it into accord with present-day requirements. The system of fines for excessive railcar demurrage has long been in contradiction with the developmental level of plants, mines, quarries, and the transport serving them. And why is it that the economic mechanism, constructed on the socialist economic categories of value, price, profits, and profitability, is unacceptable, as the railroaders think, for setting up firm inter-relations between enterprises and transport?

Everything is just the opposite. We must bring about a situation whereby each enterprise is not motivated to keep a railcar in its own station for an undue length of time. In order to do this, we must achieve the optimal utilization not only of the mainline railcars but also the technical means connected with processing them at enterprises. On the other hand, it is important to motivate the railroads themselves to increase the train speeds, to deliver all their freight to the customers rapidly and in a well-regulated manner. Production cost is an objective and most general indicator of outlays per unit of product produced. Let the enterprise pay for using a state-owned railcar in a manner similar to the way in which it pays for everything which it is allowed for turning out and selling products.

Such irritating things as the following sometimes happen to the production people: a railcar is kept on a siding for merely a half-hour extra, and here a fine has to be paid. People see that this very same car another time is shunted back and forth around the station by the workers of the Ministry of Railways system until a purpose is found for it. For the sake of fairness, let's point out the following: the railroaders also pay fines, only these are much less than the production people pay. Furthermore, even these fines go from one state pocket to another. And such fines "do not work" because they do not affect people's personal interests.

As regards providing incentives for precise operation without demurrage, the Ministry of Railways here is in the position of a monopolist. On any railroad, on the sidings of any plant, quarry, or mine the following assertion is made: if a freight shipper works conscientiously and economizes on railcar time, this still does not mean that he is being given incentives to do this. Here everything depends on the railroad management. But if a plant has failed to meet its norm with regard to avoiding railcar demurrage, norms which are set by the railroaders themselves, the question is clear: there is no way to avoid punishment "by the ruble." It takes a very strained interpretation to call such mutual relations cooperation.

Well now, is there no opening on up ahead? There is! There is, to use the language of the railroaders, a "green light" up ahead. It indicates a trustworthy way to solve this problem.

A "Green Light" Up Ahead

Here are two stations--Krivoy Rog and Krivoy Rog-Glavnyy. Millions of tons of ore and metal are shipped from here to many points of our country and abroad. And, despite such impressive amounts, it has been a number of years already

that the transport workers of the Krivorozhstal' Combine and those of the Ministry of Railways have been living in peace and harmony. The switch on the tracks did not divide but rather firmly joined together the interests of these two departments. How did they manage to do this?

"We penetrated into the essence of the problem," stated the deputy director of Krivorozhstal', G. Reshetnyak. "You know how it usually is: a person complains if he has been treated unfairly in some matter. And so, the main thing is to avoid such situations. We understood that what is required, above all, at our 'junctions' is to bring into line the labor itself and the wages paid for it."

"On several occasions the metallurgists requested that the norm for railcar demurrage be tightened up. Not so long ago this norm was routinely reduced by another half-hour. By means of this, 15,000 railcars were freed up for additional hauls...."

It must be said that this is a gratifying fact. People are working in a unified rhythm, in accordance with integrated plans and schdules. And the fact of belonging to different ministries has not hindered them from achieving success. They have also forgotten about enormous fines here. The workers of Krivorozhstal' have worked to furnish the transport workshop with the latest technical equipment. The track was renovated, and the locomotive pool added powerful new diesel locomotives. Large warehouses were built. Mechanization of loading-andunloading operations has reached 90 percent.

While acquiring a great deal of specialized rolling stock, the metallurgists also care for the railcars of the Ministry of Railways. If a door or a hatch in a railcar has become broken, or if there are cracks in the floor--these are things to be fixed. In a specially equipped section the "ailing" railcars are restored and prepared for loading. The metallurgists do not say: "This is not my concern." They know that the faster a railcar is restored, the sooner it can be loaded with the products of their own enterprise. Moreover, an accounting is made of such repairs. What previously was an apple of discord has now been transformed into a business-like partnership, a matter of mutual aid.

Having strengthened the transport workshop, the people at Krivorozhstal' have begun to improve the entire technology of the hauling operation. This is being done in conjunction with the groups at the Krivoy Rog and Krivoy Rog-Glavnyy Stations. Considerable assistance is likewise being rendered by the municipal committee of the CP of the Ukraine. Along with the raw-material suppliers and the railroad division, they worked out new schedules. Special 'threads' have been laid out for each express routing. Times have been specified for the loading work to be finished on the railcars and for them to be dispatched from the station. Therefore, even trains which are made up here move strictly according to schedule.

Unfortunately, the experience of such cooperation is still only an island in the sea. But there is really nothing to prevent it from being put on a firm legal footing. Of course, it is not simple to work out a document which would satisfy the interests of all the sectors. But this must be done. Equal rights of those working in closely related fields, their equal material and other

responsibilities for increasing the effectiveness of using transport equipment, as well as for violations of mutual obligations, are necessary. All railway tracks--both the mainline as well as the plant siding ones--must efficiently serve the national economy.

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RAIL SYSTEMS

KAZAKH OFFICIALS TAKEN TO TASK FOR RAILCAR DEMURRAGE

Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 10 Jan 85 p 2

[Unsigned article under the rubric "In the KaSSR People's Control Committee": "Speed Up Railcar Runs"]

[Text] Enterprises of a number of ministries and departments are still unsatisfactorily carrying out the loading and particularly the unloading of railroad cars. Some of these cars stand idle for dozens of hours and sometimes even for days. As a result, even though there is a sufficient amount of rolling stock, the on-schedule shipment of industrial products is not being provided. To a great extent, such a situation is to be explained by the fact that the processing of cars has not everywhere been put on a round-the-clock basis. Certain enterprises do not have full staffs of freight-handlers and machine-operators; they make unsatisfactory use of the hoisting-transport equipment, and have not set up the necessary link with their customers. It happens quite often that information about approaching freight and railcar deliveries is not received on time.

The KaSSR Committee of People's Control has announced that a mass inspection was conducted on the state of organization with regard to the loading and unloading of railroad cars at the stations and the sidings of this republic's enterprises and organizations. Actively included in this work were the enterprises' people's control groups and posts, members of the "Komsomol Searchlight" detachments and staffs, trade-union activists, and transport specialists.

It was ascertained that the proper measures have not been adopted for speeding up the loading and unloading of railcars, and, as before, their above-norm delays have been permitted on a number of enterprises in ferrous and nonferrous metallurgy, the coal industry, electric-power engineering, agriculture, construction, and trade. In a number of cases the people's control organs were compelled to take strict measures to act upon negligent managers. The following persons were discharged from the posts which they held: the deputy chiefs of the Semipalatinsk Station, comrades Ibrayev and Kasymzhanov, and the chief of the freight yard, comrade Vaksman.

Held strictly accountable for allowing the unloading of cars to fall behind schedule were the following: interval chief for loading-and-unloading operations, comrade Yeleubayev; chief of the Zhanasemey Station, comrade Kusainov; deputy chief of the Semipalatinsk Locomotive Depot, comrade Dray; director of

the Kazbakaleytorg Center, comrade Karavayev; and the director of the Kazgalantereytorg, comrade Svetkova.

For failing to adopt measures to improve the organization of loading-and-unloading operations the Alma-Ata Oblast People's Control Committee administered a strict reprimand to the director of the Alma-Ata Reinforced-Concrete Products Plant No 2, comrade Ashirov. A monetary fine of a month's salary was imposed upon him; it amounted to a total of 270 rubles. The Aktyubinsk Oblast People's Control Committee held accountable the managers of the Aktyubinsk Oblast Vtorchermet Administration, comrades Shul'ga and Zhadigerov, for railcar demurrage in excess of the established deadline. For lengthy idle time of railcars during loading-and-unloading operations and poor utilization of rolling stock, the people's control organs likewise strictly punished a number of managers of enterprises and organizations in Kzyl-Orda, Guryev, Turgay, and Taldy-Kurgan Oblasts.

The KaSSR Committee of People's Control has issued a directive to all the oblast, city, and rayon committees to intensify their controls over the on-time loading-and-unloading operations, to hold strictly accountable those persons guilty of above-norm idle times, and to achieve from economic managers the adoption of effective measures with regard to speeding up the turnover rate of railcars.

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RAIL SYSTEMS

SOVIET, FINNISH OFFICIALS REVIEW RAILWAY COOPERATION

Moscow GUDOK in Russian 17 Nov 84 p 3

[Article by L. Il'ina: "Neighborly Collaboration"]

[Text] On 15 November, at the invitation of N. S. Konarev, USSR Minister of Railways, the Finnish Minister of Transportation M. Puhakka made an official visit to our country. On the same day there were talks examining questions on the transportation of freight and passengers between the USSR and Finland.

N. S. Konarev noted in his greetings that relations between the two countries are stably and dynamically developing on the firm foundations of the Treaty on Friendship, Collaboration and Mutual Assistance signed in 1948 and in accordance with the Long-Term Program for the Development and Deepening of Trade-Economic, Industrial and Scientific-Technical Collaboration Until 1995. Comrade Konarev said that the work of these ministries would be the main guarantee for the fulfillment of this program.

M. Puhakka emphasized that the USSR and Finland are an example to the entire world of good neighborly relations between states with different social systems. The renewal of the 1948 treaty three times without any changes reflects the stability of our ties, which have not suffered any sort of fluctuations due to market forces.

In 1983, 22.4 million tons of freight were moved between the USSR and Finland. Railroads hauled 8.53 million tons of this, i.e. 38 percent. In 1984, the railroads of our countries will move about 10 million tons of foreign trade goods, which is 44 percent of the total freight turnover. Railroads play an extremely important role in export shipping from Finland to the USSR. Last year, for example, their share was about 91 percent. The transportation requirements of foreign trade organizations in both countries are for the most part met. By 15 December 1984 the USSR will provide Finland with at least 200 boxcars daily to move the planned volume of Finnish industrial goods manufactured for the USSR.

The regular passage of container trains between the stations of Luzhayka and Nakhodka-Vostochnaya began on 4 November. This will reduce the time needed to move freight from Finland and other states through the USSR to Japan and the nations of the Far East. The talks especially noted the growth in haulage

volume from the USSR to third countries via Finland. Last year 173,000 passengers were hauled between the USSR and Finland. In 1984 it is assumed that 180,000 will be hauled. There were exchanges of opinion on ways of improving the quality of passenger service and the system of selling and reserving trains seats.

There was emphasis on the importance of expanding the use of computers to improve the organization of passenger and freight transport between the USSR and Finland. There will be accelerated development and commercial operational introduction of information systems between computer centers of the October Railroad and the Finnish State Railways.

A. (Karkhilo), Finland's ambassador to the USSR, attended the talks, which took place in a businesslike and friendly atmosphere.

The Finnish guests went on a trip through our country.

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RAIL SYSTEMS

OFFICIAL ON BERKAKIT-YAKUTSK RAIL LINE CONSTRUCTION

Moscow KOMSOMOL'SKAYA PRAVDA in Russian 2 Nov 84 p 1

[Interview with Yuriy Vasil'yevich Kaydyshev, deputy chairman of the Yakut ASSR Council of Ministers, by KOMSOMOL'SKAYA PRAVDA correspondent I. Shirobokov: "The Trains Will Be Going North"]

[Text][Question] Yuriy Vasil'yevich, long before the main track on the BAM [Baykal-Amur Mainline] was completed, rails were being laid north from it on the Tynda-Berkakit line. This was the first penetration of railroads into southern Yakutia. Now one increasingly hears the name of a new route: Berkakit--Tommot--Yakutsk. Tell us, please, about this northern extension of the BAM.

[Answer] Yes, this route to the northern republic can be called an extension of BAM. After laying the new line to Berkakit, it become operative. A large flow of equipment and construction materials moved north to Neryungri, which shipped out coal in return. Now the time has come to extend the route to the depths of Yakutia, to Tammot. The length of this route cannot compare to that of the BAM--it is only 380 kilometers long--but its significance for the northern region is huge. The line will be the basis for the further working of the coal basin and reserves of iron ore and apatite. These are only some of the natural resources that will be developed and hauled out from the Southern Yakutsk Territorial Production Complex. Neither will trains return empty from Tynda. We consider this line as a reliable transportation artery for supplying the North.

For the time being, we haul everything the republic needs by air, motor vehicle and water transportation. As you know, the first is expensive and can haul only a small part of the freight. The second is also not cheap and requires considerable effort. For example, the route from Never to Yakutsk is not easy on drivers. The third, water, route, which is cheapest and has the greatest capacity, is not always reliable. This year, navigation conditions on the Lena River were very difficult, and in September shoals were exposed. The new route to Tammot will be completed with the construction of the river port on the Aldan. This will give us extra insurance against the caprices of the Lena, and we will switch freight flows to a deeper artery.

[Question] Will the BAM collectives build the railroad line?

[Answer] Of course, the units of Mostostroy-10 [Bridge Construction] are ready to move to the new sites. The bridge builders have already arrived and examined the sites and sidings. There is enough work for them. They have to built five bridges across the Chulman River alone, to say nothing of other water barriers. However, it appears that it will be easier to build railroad sub-grade in Yakutia than, for example, in the Western Section of the BAM. First of all, the builders have acquired rich experience, secondly, the main line passes along the existing Amur-Yakutsk Highway and finally, the relief is more gentle; not a single tunnel will have to be driven on the entire route.

Now, by the end of the year, we hope to deliver temporary housing and to begin cutting the right of way. We have 5 million rubles to spend. Next year this figure will grow five-fold. Berkakit, Chulman, Aldan and Tammot will be the main settlement bases for the line's construction. It is planned to be running work trains on this line by 1990. At the same time, planning work will be conducted on the construction of the line to Yakutsk.

I think that the BAM builders' rich experience will be useful to us. We hope that young people will come to us not only to search for northern exotica, but to stay in this land and responsibly take care of it. We hope that the movement "I am the master of the project" will find further continuation and development, that the mobile settlements on wheels which were recently reported in KOMSOMOL'SKAYA PRAVDA will find their place here, and that young builders will have better and more comfortable services. I also think that the Komsomol in the autonomous republic will not be taken unawares by the new line. It already has experience in patronage over the construction of hydro-electric stations and towns in permafrost, and it has made a marked contribution to the construction of the Baykal-Amur Mainline. We are ready to receive the builders in the Yakut land. We do not await guests, but hosts...

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RAIL SYSTEMS

SERIES "I" METRO CAR FAILS TESTS; DESIGN SCRAPPED

Moscow SOVETSKAYA ROSSIYA in Russian 19 Dec 84 p 2

[Article by A. Dyatlov: "Cars in a Dead End -- Why the New Series 'I' Metro Car Didn't Pass Its Tests"]

[Text] Moscow--Yevgeniy Andreyevich Ivanov, the machine operator-instructor of the experimental consist, volunteered to show me the Series I cars. We walked alongside the unusual grey consist made up of six-sided cars, quietly sat down in the spacious operator's cab, and went into the passenger area. Lying on the floor alongside the seats were heavy cast iron "pigs". "They created the weight on all tests. Like the cars were full of passengers." The consist standing next to ours muttered the customary: "Attention, the doors are closing!" and entered the tunnel. "We will not have any passengers." Ivanov sighed after its departure...

The idea of developing a Series I car (now there are cars of the 81-715 and 81-716 series) appeared back at the end of the 1960's. The metro could foresee its rush hours--every morning a storm of cars (in Moscow there are 7 million passengers per day!) and there were despairing discussions at the Subways Main Administration: "Today we have 8-car trains. A 9th could perhaps be squeezed in. After that, what? More trains? Even now there are 45 pairs per hour. Not a single metro in the world has such a figure."

Then the I car arrived. The six-sided unit squeezed through the empty tunnel. Each could hold almost 30 passengers more. Also, each I car, being made of aluminum, was three tons lighter than its "brothers". Instead of springs, it had inflatable rubber cushions; it also had pneumatic suspension and air conditioning in the operator's cab and passenger area. Its speed was 100 kilometers per hour. Its main advantage was that the electrical system would work on semiconductors--thyristors--to replace the huge system of innumerable relays, contacts and rh ostats.

V. A. Skibinskiy, the chief designer for metro traction electrical equipment, said today: "This magnificent train has only one shortcoming. It is obsolete and will never take on passengers. If you don't believe it, leaf through these documents. "

And I began to look through them.

The first consist of three Series I cars appeared in 1973. The first train was tested then. But it was hard to call this "testing." Operator-instructor Ye. A. Ivanov recalls:

"The cars were capricious. Whenever we ran them, something always broke down."

"Well, that's what testing is for," I objected, "if something is to break down, it is better here then on the line with passengers."

Ivanov smiled. Soon I understood why. V. P. Miranov, deputy chief of the Krasnaya Presnya Depot, wrote: "In three years of test runs, the cars should have been able to run 200,000 kilometers, but ran only 24,000-47,000. There were catastrophic breakdowns during the testing period: 60 breakdowns of thyristors and 30 of pneumatic suspension, "the wheels with undercut rims are not suitable to mass production, consisting of 82 parts and having no advantages compared to whole metal ones." And so forth. There are dozens of comments, improvements, refinements, eliminations.

"These endless improvements of cars," said I. I. Kotsar', chief of the rolling stock service at the Moscow Metro, "put us operational workers in a difficult situation. We were supposed to receive a finished train in 1981. As they say, you would just sit down and travel. But we have not sat down yet."

I walked for an hour and a half with Ya. I. Gavrilov, who heads metro car studies at MIIT [Moscow Institute for Railroad Transportation Engineers], through the depot, looking for the deputy chief for operations.

"And so it goes. The test cars need to be put in order for test runs. Meanwhile, we have to fight for track space to test them on."

I sympathized with him. However, the metro still is right: even the depot, considered a test ground for the new car, cannot give the testers the time that they require. It has enough of its own concerns. It has to prepare trains for work all day long. Here, the I car coming up for testing is a problem.

Here they are torn away for testing the "innovation" an hour or two a week, not any more. If the metro had its own testing track, everything would be simpler. However, that won't be completed until 1990.

The car must be improved. But they have been improving it. For 10 years, newspapers regularly wrote articles beginning with the words: "Testing of the new Series I cars is being completed..." But the firms involved in the design of this rather obsolete innovation, from the Mytishchi Machinery Plant to the Dinamo Production Organization, were all correcting, eliminating and refining. Over a ten year period, the design bureau saw the turnover of practically all designers who had begun work on the I.

It turned out that the new design group was faced with the same old flawed car.

V. P. Skibinskiy told me, "You see, when we understood what was the matter, then we came to the conclusion that the ideas were good, but alas, trying to implement them..."

"Are you saying, then, that the car could not be completed?"

Unfortunately, this is true. At the beginning of the 1970's, the semiconductor industry itself could not make it possible for designers to build I cars with all the planned power. The designers tried an easier way: they started adding thyristor components to the ordinary contact circuit. To put it simply, it was like trying to install a neon light on an ordinary kerosene lamp. Neither were car body designers lagging: even if the I cars were to complete all testing today they would have to be assembled manually, because the shop for building aluminum car bodies at the Mytischchi Machinery Plant won't be completed until 1987. Equipment is now becoming obsolete much faster than 50 years ago. The rheostatic semiconductor system for the I car did not withstand the test of time either.

The designers who began the Series I referred to objective reasons. After all, anything can happen. But who can say at what point in the multi-thousand ruble epic project the I car turned into a dead end spur only because the designers were overcome with ambition? Instead of looking at the systematic shortcomings and breakdowns of all test deadlines and coming up with new attempts to think through the design, the passenger compartment, and the design solutions for the cars, each doggedly stuck to his idea, as if to say, "After all, we are the designers. We know best!" The comments of the metro workers, those people who had to work with the new cars, were frequently simply ignored.

What is happening now? Now they have finally started to build a shop and a test track, things without which the I car cannot go out on the line. Power over the electrical systems has been put in one hand, and the developers have been subordinated to the department for metro traction drives at VNIPTI [All-Union Scientific, Planning-Design and Technological Institute for Crane and Traction Electrical Equipment] at the Dinamo Production Association. The Mytischi Plant has been designated the chief executor. They have finally stopped expecting the arrival of new cars and are testing equipment on ordinary trains: when the new I car body arrives, the equipment will be ready.

Yes, precisely. A new I. But there were 15 years of trial and error, when, in 1983, there was finally a meeting of representatives from all organizations involved in the development of the Series I. This covered the modernization of traction equipment sets. It was written in the protocol: "The low reliability of electrical equipment in general requires its substantial modernization." A bit later, six deputy ministers and main administration chiefs signed yet another document which proposed, on the basis of test results, the development of an entirely new I car, completely new from the wheels to the operator's cab.

As is known, there is already a mockup of the new car. It is also a Series I. The deadline for its delivery has been set for 1987. It will be even more attractive and modern. Waiting for this train on the metro platform, one would like to believe that this time it will not be going onto a dead end track.

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RAIL SYSTEMS

EXPANSION OF YEREVAN METRO PLANNED FOR 1985

Yerevan KOMMUNIST in Russian 11 Nov 84 p 1

[Interview with G. A. Ayrapetyan, deputy chairman of the Armenian SSR Council of Ministers, by A. Arakelyan: "Topical Interview -- There Will Be New Stations"]

> [Text] Yerevan residents and numerous guests in the city have a hard time imagining the capital of Armenia without a metro. The first trains ran in 1981. Today there are six first stage stations in operation. What work is planned for 1985 and what will be done to further develop the metro? At the request of KOMMUNIST correspondent A. Arakelyan, G. A. Ayrapetyan, deputy chairman of the Armenian SSR Council of Ministers, answered these questions.

The Yerevan Metro has hauled about 80 million passengers since it began operation. Every year the number of people using this comfortable, modern type of transportation is growing. Thus, in 1981, 17.1 million passengers were hauled, while in the last 2 years this indicator was 18.1 and 21.5 million people, respectively. To a considerable degree, this has permitted solving the city's transportation problems. Naturally, the republic government is giving primary attention to the metro's further development. Next year the basic task is the introduction of the Shengavit Station. This will require the construction of 1,300 meters of two-track tunnels from the Gortsaranain Station with a switchout track to the car depot.

This solution will permit direct ties with the city's industrial enterprises located in the region around the Gortsaranain and the Sasuntsi David Station and will give access to the car depot being put into operation this year. Without this, the metro's normal operation is becoming more difficult every day. It is also important that this work will improve the profitability of the existing first section.

There are now 310 meters of the 2,600-meter tunnel remaining to be dug. We have to use 1.5 million rubles for the construction of the traction substation and the Shengavit Station itself, where more than 15,000 cubic meters of concrete must be poured. A total of 11 million rubles worth of construction-installation work is planned for next year. This next year will also see the

continuation of construction work on the present intermediate Oktemberyan Station and on the Ploschad' Spandaryana Station, with their unconditional opening scheduled for 1986. Their commissioning will complete the first stage of the Yerevan Metro. It is intended to do all construction-installation work with republic organizations: Ministry of Industrial Construction, Armtransstroy [Armenian Transportation Construction], Armglavmontazhspetsstroy [Armenian Installation and Special Construction], the Bridge Detachment No 107 and Administration No 157, USSR Ministry of Transport Construction, Transsignalstroy [Transportation Signal Construction], Armsvyaz'stroy [Armenian Communications Construction], Aviaremstroy and others.

Now about the future. At the present time we are examining issues related to the second stage of the metro. It will extend in the direction of the Achapnyak region. This will require the construction of a new bridge across the Razdan River. The other direction will be toward the 26 Komissarov Rayon to the electric lamp plant. In the longer term, it will encompass the Sovetskiy and Ordzhonikidzevskiy Rayons in the direction of the Norkskiye areas and Erebuni, and also other regions of Yerevan.

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RAIL SYSTEMS

PROGRESS, PROBLEMS OF NOVOSIBIRSK METRO CONSTRUCTION

Moscow PRAVDA in Russian 2 Dec 84 p 1

[Article by PRAVDA correspondent Ye. Solomenko: "There Will Be a Metro in Siberia"]

> [Text] Novosibirsk--"Welcome to our underground tsardom!" says Vladimir Mikhaylovich Yankovskiy, smiling as he opened the massive door to the gate. There were other gates behind this and behind them one could see the tunnel, lined in ferro-concrete ring blocks. This is the tunnel of the future Novosibirsk Metro.

The first metro beyond the Urals. This is an honor, but what additional difficulties were encountered here! After all, Novosibirsk is at present the only city with negative average annual temperatures where a metro is being built.

Incidentally, this is far from the only difficulty. The underground electric trains should open their doors to Novosibirsk by 1 January 1986, but the Novosibirskmetrostoy [Novosibirsk Metro Construction] Administration was only created two and a half years ago and is now in the beginning stages. A plant for ferro-concrete structures, a vehicle base and a new third tunnel detachment have just started operating here.

Novosibirskmetrostroy opened its professional-technical academy and training center, at which specialists from Minsk, Sverdlovsk, and other cities are sharing their work experience. The Novosibirsk Institute for Railroad Transportation Engineers has organized courses for training engineer crews and created a basic faculty.

The administration's collective is, as they say, on its feet. In the first and third quarters of this year, it won prizes. The first piling for the future metro was driven comparatively recently, in May 1979. However, by the end of 1985, Novosibirsk citizens will have sections of five stations which will link the two banks of the Ob.

V. Yankovskiy, chief of the 33rd tunneling detachment, led us along the route being laid. Vladimir Mikhaylovich came here to Novosibirsk from the BAM [Baykal-Amur Mainline]. He is working together with comrades who drove the famous Severomuyskiy Tunnel--V. Savchenko, chief engineer of the detachment, and Ye. Izygashev, secretary of the Komsomol organization.

"This is, of course, not the BAM, but it has enough difficulties," explains Vladimir Mikhaylovich. "Under practically every building, tunnel driving prepares new surprises for us. The soil is clay and sand. It easily loses its stability and is subject to extensive settling."

However, their detachment is successfully dealing with all difficulties. It is no accident that it has the Challenge Red Banner of Novosibirskmetrostroy.

Finally, the tunnel led us to the brigade. It is preparing the ventilation and utility line excavations. This is being done manually, as no machine could pass through the small side tunnels. Miners' hammers dig into the wall and shovels are used to load the ground. Vladimir Drynin's comprehensive tunnel driver brigade is the best in the detachment. Young people are selected for it: the average age is about 31 years (incidentally, this is the same for all the tunnel detachments). There are only two "veterans" here - V. Vibe and A. Dunets, but they and the young ones work with ardor. The young ones are no slackers either. For example, Vladimir Tishchenko is business-like, responsible, and would not let a single bolt go by. He would pick it up. His namesake, Vladimir Tsarapkin, is the "forward looking" member of the brigade: he has been entrusted with preparing new areas for development. The third Vladimir--Bakharev--is a quite young tunnel driver: he has been here only a year.

"He is working well," Drynin praises the newcomer, "He is not pushing himself for glory but simply working for the joy of it."

Vladimir Drynin is a member of the Novosibirskmetrostroy party committee. He also heads the brigade leaders' council.

Drynin recently visited his native Kharkov. There, of course, he met with colleagues and discussed his project site with them. He returned contented:

"I think young people will come here and give us a hand, especially prior to startup."

Kharkov and Tashkent metro builders are already helping Novosibirsk workers. The same applies to miners from the Kuzbass and tunnel builders from the BAM. It is symbolic that Tashkent specialists started building the metro in the capital of Siberia, while in the next five-year plan people from Novosibirsk will build underground routes in Alma-Ata.

Of course, not everything here is going with a "hurrah". There are many unsolved problems. The lack of key personnel is still one of them. The party Gorkom passed a decree to assign 500 people to the construction of the metro on labor collective assignments. However, many rayons have been vacillating and are not rushing to implement this decree.

The Gorkom also helped in assigning orders for this project to enterprises in the city: more than 100 Novosibirsk associations and plants are now fulfilling these orders. The metro builders are being especially actively supported by collectives from the Sibakademstroy [Siberian Academy Construction] Administration, and the Elektrosignal, Siblitmash [Siberian Casting Machinery] and Sibelektroterm [Siberian Electro-thermal] Plants. Unfortunately, the same cannot be said of the Novosibirsk Gorispolkom: because of its slow service, there are sometimes delays in the construction of stations and in tunnel driving.

S. Smirnov, chief of Novosibirskmetrostroy, explains:

"We are now coming to the 'finish line'. However, this is the most difficult period. Therefore, during this startup year we should complete huge volumes of construction-installation work--33 million rubles worth."

Sergey Alekseyevich has been working on metros for more than 30 years. He has experience with which to compare this work. Nevertheless, he is confident that Novosibirsk workers will be ahead of schedule in opening the first underground section.

They have already completed the driving of all the line tunnels and the finishing work on the Studencheskaya and Oktyabr'skaya Stations. The Ploschad' Lenina Station is being lined in grey and red granite. On 20 November, at the Krasnyy Prospekt Station, the finisher brigade of A. Dontsov from the Soyuzmetrospetsstroy [All Union Metro Specialized Construction Administration], set an all union record for facing walls with granite.

Startup of the Novosibirsk Metro will be yet another labor report to the 27th CPSU Congress. This is obviously a great gift to this city of almost 1.5 million inhabitants. The metro will not only improve transportation services to Novosibirsk citizens, who today are making many just complaints, but will also permit the modernization of a sizeable part of the decrepit urban utility lines system.

The first metro in Siberia. Even the names of the stations strive towards the future. Next to the Rechnoy Vokzal Station, ships with travelers on the Ob and other river routes of Siberia will be docking. The Sportivnaya will precede the construction of a "Siberian Luzhniki" [stadium] here.

From the Sportivnaya Station we went into a tube, leaving behind us a huge steel metro bridge moving ever out from the left bank of the Ob to the right. The portal of the tunnel is adjacent to the next station--the Studencheskaya. We left the granite and marble vestibule and went out into the freezing outdoors. On the wall of the building there was a sign saying, "There are only 60 more weeks until the startup of the metro."

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RAIL SYSTEMS

NEW EQUIPMENT USED IN MINSK METRO TUNNELING WORK

Moscow TRUD in Russian 15 Nov 84 p 1

[Article by TRUD correspondent V. Belitskiy: "Mechanical Hands Do the Tunneling"]

> [Text] The second line of the Minsk Metro is being built with the help of a new mechanized shield. Using this innovation and other scientific-technical achievements, tunnel builders in the Belorussian capital fulfilled their annual plan a few days ahead of time and in May of next year plan to complete their five year plan target.

Vladimir Gaydarenko said "Let's go!" and waved his hand. As section chief, this is generally not his concern, but this was a special case. Responding to the legendary command, machine operator Aleksey Kerasirov pressed a button on the panel and the huge 300 ton tunnel driving shield slowly crawled one meter ahead. This was the first meter of tunnel between the future stations Proletarskaya and Traktornyy Zavod. The construction of the Minsk Metro's second line began in the days before the October holiday.

This event took place in an ordinary working setting, although the occasion for the brass band and the hustle and bustle of photoreporters was one for which there was no valid equal. This was the beginning of work for a new tunnel driving machine on which, as I later heard in Moscow, metro builders are placing great hopes. It was built by the Yasinovataya Machinery Building Plant imeni 60 Years of the USSR following a design by the Gipromashobogashcheniye Institute and the Special Design and Technological Bureau of Glavtonnel'metrostroy [Metro Tunnel Construction Main Administration] and has the serial number 1.

In tunnel construction, machines of this type are called shields--in the direct sense of this word: people are covered and protected by a very strong steel pipe capable of withstanding very high pressures. However, the forward part of this shield is open. Here rock is crushed and space is prepared for the next forward movement of the shield. If the path lies through unstable, weak ground, the so-called sedimentary rock--and this is most frequently met in the construction of metros--then considerable dangers arise for workers at the face: rock slides, subsidence and inflows of insidious quicksand...

Builders and scientists have long been searching for the best technical solution permitting the removal of tunnel drivers from the face and thus making their work safe. This modern design shield, the same one which Vladimir Gaydarenko, the section chief, gave the command to move forward slowly, permits a complete solution to this important social task. So feels K. M. Zenin, chief project designer, with whom I squatted in the small cell of the shield and saw how easily the hydraulic muscles of the telescopic arm with one-half meter long hard alloy teeth in its hand responded to orders. In scientific language, this is an "excavator organ" and can reach any point on the face. The teeth easily break the clay and tear it down where it is grasped by a second "palm" belonging to another machine, the loader, where it is deftly loaded onto a conveyor belt exactly like a peasant scrapes away bread crumbs from a table after a meal.

Zenin quietly said: "You see, there is not a single tunnel driver in the face. There are eight people working in the link and all they do is bend their fingers. There are three machinists, a loader operator, a fitter-electrician and three installation workers who gather concrete blocks into a circle, but even this is done with a special stacker. That's all!"

It turns out that it is too easy. Therefore, attempting to find a sceptical view, I turned to Anatoliy Prasolov, a brigade leader who had been listening to our conversation. Who, if not he, 22 years old, and beginning work at the famous Abakan, working in tunnels, should be able to evaluate the new panel.

"Will you take it?"

"We have already taken it, don't you see?" and not wasting any more time on an outside conversation, he gave the operator the command: "Move!"

In the time we had taken talking about it, the shield had dug through two meters. I was surprised by this pace, but it turned out that the real speeds are still ahead. The new tunnel driving complex should move 150 meters a month--1.5-fold faster than present non-mechanized shields. However, it will gather maximum speed only after approval for operation, which will be made after a strict mining engineering inspection. According to the rules, this will be made after it has driven the first 60 meters.

Coming out of the excavation pit where the shield had been assembled and put into underground orbit, I noticed a hand written announcement on the office trailer: "At one o'clock there will be an exam for shield and erector operators in the training center." This means that after showing their skill in practice, tunnel drivers should give evidence of their theoretical knowledge. Good luck!

S. N. Vlasov, chief engineer at Glavtonnel'metrostroy, Ministry of Transport Construction, comments:

The new shield, which began work in Minsk, is important to us above all because it will make work safe and change its nature--from manual to machine labor. Mechanization of the main operations in tunnel construction is the basic direction of scientific-technical progress in our main administration.

This is very difficult above all because of the diverse engineering-geological conditions in each of the 14 cities where metros are being built--from quicksand to hard rock. Each rock requires its own methods and mechanisms of working.

About half of all tunnel drivers' work is now done manually. Mechanized tunnel driving complexes such as the one in Minsk will substantially reduce this figure. Thus, while during the 9th Five-Year Plan mechanized shields accounted for 12 percent of tunnel driving operations, in the 10th Five-Year Plan it was 22 percent, and in the current five-year plan it has grown to almost 43 percent in three and a half years. Now such complexes are used in Moscow, Leningrad, Kiev, Gorkiy, Kuybyshev, and Novosibirsk. Altogether, during the five year plan 140 kilometers of metro tunnels should be driven with the so-called closed method using various types of shields. In the next plan, we expect to increase this another 20-25 percent.

We face sizeable problems involving the increase in construction volume. Many cities want to obtain or expand their metros, a convenient and comfortable type of transportation. Next year we plan to put into operation almost 50 kilometers of metro tunnels -- this is a first. The new lines and stations will be introduced in Moscow (four sections), Tbilisi (two), Leningrad, Baku, Yerevan, Gorkiy and Novosibirsk.

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RAIL SYSTEMS

NEW EQUIPMENT WILL ALLOW RUNNING OF LONGER, HEAVIER TRAINS

Moscow GUDOK in Russian 2 Nov 84 p 2

[Letter by M. Igumnov, locomotive engineer instructor at the Irkutsk Classification Yard, and a commentary by A. M. Nesterov, deputy chief, Locomotives Main Administration: "What Should Be Used To Haul Large-Freight Trains?"]

/Text/ How should we increase the average weight of a train, or, to put it more truthfully, at what price? This is causing the greatest concern at the present time in the locomotive depot of the Irkutsk Classification Yard. And justifiably so. Judge for yourselves.

The length of the receiving-and-dispatching tracks makes it possible for us to increase the weight of one-third of all trains, i.e., those used on liquid- and coal-hauling routes. The VL10U electric locomotives can no longer assimilate this reserve.

Not so long ago we tested out the 12-axle VL11 locomotives here. They will allow us to increase the average weight of large-freight trains by 500 tons right away. Nevertheless, the usable length of the stations will be far from fully employed. Moreover, the depot has been adapted to repair 8-axle electric locomotives. The new equipment requires expensive modernization of the repair shops and all the technical servicing points. Replacement of the locomotive park will take years. A situation is inevitable whereby a dispatcher will no longer be able to "juggle" heavyweight trains with the new electric locomotives. Yes, we will increase the average train weight by 100--150 tons. But, in connection with this, there will be an unjustifiably sharp increase in the expenditure of electric power for metering. In the depot they remember well the period when the VL8 electric locomotives were being replaced by the VL10's. At time the consumption of electric power immediately jumped by 20 percent. Utilization of the locomotives' capacities will become worse, as will their productivity because of under-loading. We will come right up against the problem which has brought about stormy discussion in GUDOK: is it worthwhile or not to switch off a portion of the motors when running lightweight trains?

Here are just a few of the problems which will have to be solved in equipping our depot with 12-axle electric locomotives. Is there another way which would allow us, with much lower outlays, to assimilate reserves and increase train weight? Yes, there is. And it was talked about in quite some detail in the pages of GUDOK. What we are talking about is the electronic apparatus which

has been developed by the scientists of the VNIIZhT /All-Union Scientific Research Institute of Railroad Transport/, which allows two serially produced VL10U electric locomotives to be coupled and run by a single crew. Coupling and uncoupling take only a few minutes. The total traction capacity can be changed depending upon what kinds of trains--heavyweight or lightweight--are in the station. Finally, the train weight for the liquid- and coal-hauling routes will increase by 1500 tons and more. The length of the receiving-and-dispatching tracks will be fully utilized. We only need to increase the number of VL10U machines by 15--20 percent. And the main thing is that the depot will not have to change either its equipment or its technology; nor will the workshops need to be restructured.

Unfortunately, our depot still has very few of the machines with the new apparatus. This is all the more important inasmuch as the electric locomotives have to be fitted out right here in the depot. We must speak frankly; this does not always turn out to be qualitatively well done. There is a lack of skilled specialists and the necessary materials. It is clear that any deviation from the proper technology affects the precision and error-free operation of the electronics apparatus. It is necessary that the Main Administration specify a certain single plant to produce and fine-tune this complex apparatus, rather than compelling the depot to engage in this matter on its own.

We see how much energy has been put into the introduction and assimilation of these systems by the VNIIZhT staff members as well as our own repair-workers. But, you know, there has not been, nor is there now, any centralized supply of the necessary spare parts. Up to now everything is being maintained by the enthusiasm of a few persons.

There is also something for the designers to think about. So far no reliable schematic has been created for commutating the apparatus. Therefore, the locomotive engineers are far from fully utilizing its possibilities. The Locomotives Main Administration which, it would seem, ought to be extremely interested in finishing up these systems as quickly as possible, has had little influence on the solution of these problems.

As a result, after our request for additional deliveries of VL10U electric locomotives, we suddenly began to receive the three-unit VL11's. We cannot understand what brought about such a decision. Because it, as already mentioned, merely complicates the situation at the depot. With regard to systems, because of an insufficient number of locomotives, we are still operating on 8--10 coupled machines. This, of course, is much too few to substantially increase the average train weight.

Letter from Locomotive-Engineer-Instructor Commented upon by A. M. Nesterov, deputy chief, Locomotives Main Administration:

The question posed by the locomotive engineer-instructor, M. Igumnov: "What should be used to haul large-freight trains?" is an extremely important one. Our administration, as well as the Railway Traffic Main Administration, in conjunction with scientists from the VNIIZhT, are constantly monitoring and studying it. On more than one occasion it has been considered in the Collegium of the Ministry of Railways. A targeted program has now been worked out

which provides for the redistribution of the locomotive fleet throughout the railroads, plus the maximum utilization of electric locomotives, fitted out with the traditional apparatus for connecting them within a system of many units, integrated with the new, remote-control equipment (SMET). The latter is also discussed in M. Igumnov's letter. In 1985 some 1,700 such electronic devices will be installed on locomotives, allowing serially produced electric locomotives to be coupled and run by a single crew.

It is not simple to carry out what has been outlined. Help from the locomotive-repair plants is still insufficient. Therefore, it was also decided to conduct the SMET installation at the locomotive depots of the East Siberian, Kemerovo, South Urals, and Kuybyshev Railroads.

Of course, all this hustle and bustle has placed an additional burden on the shoulders of our repair workers. Not all the enterprises have enough skilled fitters for the apparatus. We do not yet have a precise system for supplying spare parts. M. Igumnov is right when he speaks about the rather low level of equipment reliability.

Matters of concern for us include the technology of making up and throughputting trains, along with the regulation of locomotives operating on the SMET system. Unfortunately, the example of the Irkutsk Depot, where, out of 86 equipped electric locomotives, only 8--10 coupled units are in steady operation, is not an isolated one. It demonstrates once again that the new equipment is being utilized extremely ineffectively in a number of cases.

At this same Irkutsk Section the calculated weight norm for an electric locomotive is 3,400 tons, while two coupled machines usually haul 4,500 tons; so it is clear that locomotive productivity is declining, and the expenditure of electric power is increasing. In addition to this, the park needs to be increased. In short, it does not take a big specialist to understand that the operation of coupled electric locomotives in the Baykal region is completely ineffective. It was precisely, therefore, for operational testing that the 13 VL11 electric locomotives were sent there. Subsequently, following the modernization of the Slyudyanka Locomotive Depot, which is planned to be completed in the very near future, these three-unit machines will be used for hauling heavyweight, liquid-carrying trains on the Sukhovskaya--Slyudyanka Section.

Let me remind you that the VL10 and VL11 electric locomotives are standardized to the maximum extent, i.e., most of the assemblies and units in them are interchangeable. It is not necessary, therefore, to create special workshops or have the repair workers undergo retraining. The finishing touches are now being put on this machine. The third unit will be fully autonomous. It will be much simpler to attach it to the locomotive.

In conclusion, let me note that the Kharkov Electrical Equipment Plant of the Transsignalsvyaz'zavody Trust next year will begin comprehensive manufacture of the SMET apparatus. Such specialization will, without doubt, increase the reliability and improve the quality of the apparatus.

The Locomotives Main Administration, in conjunction with the VNIIZhT, the planning-and-design bureaus of our administration, and the services of the

railroads, have already worked out the appropriate norms regarding the expenditure of spare parts for the technical servicing and repair of this apparatus.

Outfitting serially produced locomotives with SMET systems allows us to increase the weight and length of trains without any special capital investments. However, the decision regarding the method to be used in hauling large-freight trains must be made while taking specific conditions into account.

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RAIL SYSTEMS

OFFICIALS ON PLANS FOR NEW LOCOMOTIVES

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 18 Dec 84 p 2

[Interview with Stepan Pavlovich Filonov, chief designer at the Voroshilovgrad Diesel Locomotive Building Works imeni October Revolution Production Association, and V. Kal'ko,chief of the Diesel Locomotive Administration of the Ministry of Railways' Locomotives Main Administration, by SOTSIALISTICHESKAYA INDUSTRIYA correspondent D. Murzin: "Locomotives of the 20th Century"; date and place not specified]

[Text] An unusual train stopped at the platform of the capital's Riga Station. It consisted entirely of locomotives of the future. Our correspondent, D. Murzin, asked S. Filonov, the chief designer at the Voroshilovgrad Diesel Locomotive Building Works imeni October Revolution Production Association, and V. Kal'ko, the chief of the Diesel Locomotive Administration of the Ministry of Railways' Locomotives Main Administration, to discuss these locomotives.

[Question] Stepan Pavlovich, what is the most powerful diesel locomotive in the world?

[Answer] The TE-136. This is the one at the head of our consist. Each unit of this machine has 6,000 hp, twice as much as the series-produced engines. It has a 48-ton tractive force. Behind it are the 4,000-hp units. All these locomotives will be sent from here to undergo testing in difficult conditions on the Northern Railroad. There, on the Sosnogorsk--Inta route, several locomotives rated at 4,000 hp per unit are already in regular operation.

[Question] Such a sharp increase in power obviously required fundamentally new design decisions.

[Answer] Obviously. I will mention only a few of them. First of all, the new models use load bearing underframes, advanced frame-mounted drives and electrodynamic braking, and there are changes in the trucks. The collective at the Kolomna Plant Association built a four-cycle diesel engine which can not only increase power, but also reduce fuel consumption by 5-7 percent. Its control is maximally automated on an electronic base.

All this permitted a 1.5-fold reduction in operating costs and a 1.5-2-fold increase in service life between repairs. While the series-produced models

have 46 kilograms of metal per unit of power, the 4,000-hp units have 37, and the 6,000-hp units 33 kilograms. The total economic effect from the operation of the new locomotives is 102,000 rubles annually for the first machine and 350,000-360,000 for the second.

[Question] How will the engineers feel in the new diesel locomotive?

[Answer] Comfortable conditions have been created for them. The cab has been transformed into a heated capsule insulated from the body and frame. Practically no vibrations or sound are noticed.

[Question] Here is a question to the customer. What is your evaluation of the new machine?

[Answer] B. Kal'ko: It is what we need now. A 4,000-hp diesel locomotive enabled us to increase train weight by 700 tons immediately, while a 6,000-hp one will bring another 30 percent increase.

[Question] The series production of the new models will begin at the start of the 12th Five-Year Plan. What future can they expect?

[Answer] Almost 50 percent of the diesel locomotive fleet will be 4,000-hp machines and 30 percent 6,000-hp. We have now given ourselves the task of annually increasing average train weight by 100 tons. The new diesels will permit the beginning of high speed passenger routes in the west, southwest and east.

Finally, the working conditions of engineers in the new diesels are incomparably better than for present machines. We feel this is a great achievement.

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RAIL SYSTEMS

SOVIET DIESEL LOCOMOTIVE BUILDING SINCE 1946

Moscow ELEKTRICHESKAYA I TEPLOVOZNAYA TYAGA in Russian No 10, Oct 84 pp 13-16

[Article by V. A. Kal'ko, chief of the Diesel Locomotive Administration of the USSR Ministry of Railways' Locomotives Main Administration, and N. I. Suboch, candidate of technical sciences and railroad transport veteran: "Sixty Years of Diesel Locomotive Building"]

[Excerpts] November 1984 marks the 60th anniversary of the building in the USSR of the world's first mainline diesel locomotive, the ShchEL-1. At such a difficult time for our country the creation of such a machine was equal in significance to building spaceships nowadays. During this period diesel traction has been expanded in various fields of railroad transport. Diesel locomotives are used for freight and passenger traffic, switching, and industrial transport.

The history of diesel locomotive building and the development of diesel traction on railroads are discussed below by the chief of the Diesel Locomotive Administration of the Locomotives Main Administration of the Ministry of Railways, V. A. Kal'ko, and candidate of technical sciences N. I. Suboch.

After the war, i.e., in 1946, diesel locomotive building was resumed.

PHASE THREE. From 1946 through 1956. During the post-war period the Kharkov Plant became the center for diesel locomotive building. Carrying out the decisions of the Communist Party on the retooling of the country's railroad transport, the plant's group under the leadership of the chief designer, A. A. Kirnarskiy, in a brief period of time created the designs for new Soviet diesel locomotives with electric transmissions and organized their serial production.

The plant's director during this period was Konstantin Konstantinovich Yakovlev, a graduate of the Moscow Electro-Mechanical Institute of Transport Engineers (MEMIIT).

The first diesel locomotive produced in 1947 was a single-sectional TE-1 freight-switching locomotive with a four-cycle D-50 diesel with a capacity of

1000 hp and with a d.c. electric transmission. A characteristic of all the post-war diesel locomotives is the fact that, instead of a single-frame construction of the undercarriage, as was produced during the pre-war period, the undercarriage of the present day models is of the truck type.

The second characteristic is the fact that all the diesel-locomotive diesel engines have pressure charging, for which the energy of the exhaust gases is utilized. This has increased the capacity of the diesel by 50 percent.

In 1950 the 2TE2 mainline diesel locomotive was created with a capacity of 2 X 1000 hp /horsepower/. For developing this machine a group of specialists, headed up by Chief Designer A. A. Kirnarskiy, was awarded the State Prize of the USSR in 1952. Also among this group was Petr Vasil'yevich Yakobson (1889--1973), candidate of technical sciences and one of the initiators of introducing diesel locomotive traction in the USSR.

By 1950, 3,114 km (2.7 percent) of the 116,985 km of the total length of railroads, had been converted to diesel locomotive traction. From 1955 on this plant began to produce the 2TE3 mainline diesel locomotives with a capacity of 2 X 2000 hp. In 1958 the plant created the TE10 single-section diesel locomotive with a capacity of 3,000 hp. It subsequently served as a base for creating advanced locomotives with other modifications.

The Kharkov Transport Machine-Building Plant designed, built, and produced diesel locomotives up until 1969. Created here were 9 models of the latest locomotives. Diesel locomotives made in Kharkov are successfully operating on our country's mainlines even up to the present time.

PHASE FOUR. Diesel locomotive building from 1956 to our own times. Sixty years passed by. During this period locomotive building made great forward strides. The rapid development of diesel traction on the railroads began after the 20th CPSU Congress (held in February 1956), which adopted the Directives of the Sixth Five-Year Plan for Developing the National Economy of the USSR during the Years 1956--1960.

Upon the decision of this congress, steam locomotive building in the USSR was halted, and the steam locomotive building plants quickly began to be restructured for diesel locomotive building. As the new diesel locomotives were produced, the railroads have intensively converted from steam to diesel locomotive traction.

By the end of the Sixth Five-Year Plan (1960), 17,700 kilometers of the railroads, or 14 percent of the total length, were operating on diesel traction; at the end of the Seventh Five-Year Plan (1965) this figure had reached 55,000 km of the railroads, or 42 percent, and at the end of the Eighth Five-Year Plan (1970) 76,000 km, or 57 percent, were operating on diesel locomotive traction.

A new stage in Soviet diesel locomotive building began with the conversion to a.c. electric generators, which allowed us to create locomotives with capacities ranging from 4,000 to 6,000 hp. A.c.-d.c. electric transmission, as developed by the scientist I. B. Bashuk, was used for the first time in the USSR

in 1968 by the Voroshilovgrad Plant on the TE109 freight diesel locomotive with a capacity of 3,000 hp.

At the end of the Ninth Five-Year Plan (1975) 86,000 km, or 63 percent of the entire length, were operating on diesel locomotive traction.

The Central Asian Railroad was the first in the network to fully convert to diesel locomotive traction. This occurred starting with 4 November 1974, i.e., during the Ninth Five-Year Plan, when the last steam locomotive was eliminated. This railroad has been a pioneer in the practical application of diesel locomotive traction in mainline traffic.

At the present time in our country diesel locomotives are being buil' in Kolomna and Voroshilovgrad, Murom and Lyudinovo, Bryansk, Kaluga, and Kambarka--working everywhere are remarkable groups of scientists, engineers, workers, creating diesel locomotives. These groups are implementing the decisions of the 25th and 26th CPSU Congresses with regard to producing more powerful and economical mainline and switching diesel locomotives with a reduced proportional material consumption.

As the homeland of diesel locomotives, the Soviet Union at present ranks first in the world with respect to their production. More than 65 types of diesel locomotives have been designed and built over the past 60 years. This country's railroads now utilize 14 types of mainline and 28 types of switching industrial diesel locomotives with electric and hydro-dynamic power transmission. Of the 28 types, 6 switching industrial diesel locomotives are operated on narrow-gage railroads.

Diesel locomotives of 10 series produced by Soviet plants have been awarded the State Badge of Quality. Of these, 4 series are equipped with electric and 6 series with hydro-dynamic power transmissions. During this period the capacity of the mainline machines increased 6-fold, while the metal consumption was reduced by a factor of 3.7 on the average.

Soviet diesel locomotive building has a certain characteristic--its international mission. The diesel-locomotive builders of the USSR supply diesel locomotives not only for their own country's railroads but export them in large quantities to many of the world's countries--both the socialist and the developing countries, as well as the capitalist countries (the GDR, PPR, HPR, CSSR, Bulgaria, Mongolia, SRV, Cuba, Yugoslavia, Syria, Egypt, Guinea, the KPDR, Cambodia, Iran, and France). Our diesel locomotives have met with undiminished interest in the foreign market. During the present-day, complicated situation in the world the dissemination of Soviet diesel locomotives abroad is of particularly great political importance.

At the present time two-thirds of the total length of the railroad network (96,000 km) is served by mainline diesel locomotives, while the remaining third (47,000 km) is served by electric locomotives. Diesel locomotives handle 42 percent and electric locomotives--58 percent of the freight turnover. All switching work is performed by diesel locomotives.

The diesel locomotive builders of the USSR are greeting their own 60th Anniversary with many interesting designs. Among these are the following: the Voroshilovgrad Plant's 2TE121 series diesel locomotives with a capacity of 8,000 hp and 4TE10S with a capacity of 12,000 hp., the Kolomna Plant's TEP70 series with a capacity of 4,000 hp, the Lyudinovo Plant's TEM7 (2,000 hp, TEM12 and TGM12 with capacities of 1,200 hp, the Murom Plant's TGM23V with a capacity of 1,200 hp, the Bryansk Plant's TEM3 series with a capacity of 400 hp, and the Kambarka Plant's TGM40 with a capacity of 400 hp.

The most important task which the party has now entrusted to the people is the economical and efficient utilization of the country's natural resources. In connection with this, these days, when there is further development of diesel locomotive building, along with increasing the capacities of the diesel locomotives, there are urgent tasks of reducing their material consumption, increasing their economical qualities, reliability (long life), adapting diesel locomotives for operation on natural gas, and a whole range of other problems connected with improving the operation and repair of diesel locomotives. It is necessary to reduce the labor consumption of their technical servicing and curtail the expenditure of spare parts. In order to safeguard the environment, we must create diesel locomotives with greatly reduced emissions of harmful substances.

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RAIL SYSTEMS

TRENDS, NEEDS IN SOVIET DIESEL LOCOMOTIVE DEVELOPMENT

Moscow GUDOK in Russian 5 Dec 84 pp 1-2

[Round-table discussion, recorded by V. Sluzhakov, GUDOK correspondent: "The Diesel Locomotive--Our Pride and Concern"]

[Text] Sixty years ago the world's first mainline diesel locomotive was built in the USSR. Its appearance shattered the lack of confidence in the future prospects of diesel-locomotive traction and laid the foundation for constructing progressive equipment. In those days GUDOK wrote that G. M. Krzhizhanovskiy had called this moment a major historical event, for diesel locomotives would play a decisive role in the future of our transport.

Our country's locomotive building made broad strides during those years. Sixty-five models of diesel locomotives were built. With regard to the production of such locomotives the USSR ranks first in the world. Soviet locomotives can be encountered in 16 countries.

And, although today we have approximately 60 percent of the hauls on electrified routes, we must not forget that two-thirds of our network is served by diesel locomotives.

Therefore, on the eve of a conference dedicated to this noteworthy event, a conference which opened today in Leningrad, GUDOK gathered together some of its participants in order to discuss the diesel locomotive today and tomorrow.

Taking part in this meeting were the following persons: N. SUBOCH and I. NIKITIN--veterans of diesel-locomotive traction; V. KAL'KO--deputy chief of the Locomotives Main Administration of the Ministry of Railways; V. INOZEMTSEV--doctor of technical sciences and deputy director of the VNIIZhT [All-Union Scientific and Technical Institute for Railroad Transport]; A. MIKLUSH--department chief at Soyuzteplovozput'mash; N. FUFRYANSKIY--doctor of technical sciences and professor at the VZIIT [All-Union Correspondence Institute for Railroad Transport Engineers]; Yu. KhLEBNIKOV--

candidate of technical sciences and chief designer at the Kolomenskiy zavod Production Association; S. SILIN--candidate of technical sciences and deputy chief of the diesel-locomotive and locomotive department of the VNIIZhT; A. GIBALOV, deputy chief designer at the Voroshilovgradteplovoz Production Association; V. YERMAKOV, chief of the Zhmerinka Depot; A. PAVLOV--Hero of Socialist Labor and a fitter at the Yudino Depot; A. PLOKHOTNICHENKO--a locomotive engineer at the Pechora Depot.

The Legendary "Pike"

...An unusual locomotive, with "ShchEL1" inscribed on its name plate, pulled up to the platform of the Moscow Station in Leningrad. This was the world's first mainline diesel locomotive with electric transmission. Its capacity was 1,000 hp /horsepower/. Written on it in big letters was the following: "Built in 1924 in Leningrad in accordance with a design by Ya. Gakkel'. In memory of V. I. Lenin."

SUBOCH. During the first few years of Soviet rule, devastation reigned in industry and in transport. By the beginning of 1922 more than 60 percent of the steam locomotives were not operating. And it was precisely then that the question arose of replacing them with locomotives equipped with internal combustion engines. The task was extremely difficult. Numerous previous attempts to implement this idea had ended in failures. And it was only due to the initiative of Vladimir Il'ich Lenin, his persistent attention to railroad transport, that success was achieved in creating the ShchEL diesel locomotive during one year's time at the Baltic Plant. At the same time, in accordance with plans of the NKPS /People's Commissariat of Railways/ and under the supervision of Professor Yu. Lomonosov, two more diesel locomotives were built in Germany. This was a victory for Soviet Russian technical thought.

After the initial tests the Kolomna Plant was the first to organize industrial production of the diesel locomotives.

NIKITIN. During the pre-war years we already had about 30 such machines, which were based at Ashkhabad. In the terrible year of 1943 the enemy was approaching the Volga. The right-of-way of the Central Asian Railroad turned out to be the only one over which it was possible to deliver Transcaucasian petroleum for the front. Despite the extremely harsh conditions of the Kara-Kum Desert, the pioneers of Soviet diesel-locomotive building honorably coped with the task assigned to them. Fuel was delivered without interruption.

During the post-war years our country's industry created about 10 new machines within a brief time period; some of them are still operating on the railroads to this very day.

SUBOCH. The sixtieth anniversary of the first mainline diesel locomotive is being greeted by the diesel-locomotive builders. The pioneer TE136, with its capacity of 6,000 hp /horsepower/, which a few days ago issued forth from the gate of the Voroshsilovgrad Plant, is a great achievement. Transport has long needed such a machine. I call upon my colleagues--the diesel-locomotive

builders belonging to the older generation to urgently render the maximum aid and support to the developers so as to speed up the serial building of these new machines.

FUFRYANSKIY. We must speak directly, without going onto any sidetracks. Yes, our country is the native land of the world's first mainline diesel locomotive. And it was here that diesel-locomotive traction began to be developed. During the 1950's we amazed foreign firms with our diesel locomotives; we already had at our disposal the TE10 machine with a capacity of 3,000 hp. And for many years we were ahead of other countries. At present, unfortunately, this is no longer the case. Railroaders have been struggling to present industry as soon as possible the 4,000-hp 2TE121 machine. It is a fine one. Our plants achieved it through much suffering. But, you know, its age is already quite considerable; its serial production was supposed to begin 10 years ago. And we already have an extreme need for machines with capacities of 4,000, 6,000, and in the not-too-distant future even those with a capacity of 8,000 hp.

The Right To Choose

Today railroaders are confronted with the following task: to fully satisfy the requirements of the national economy for hauls. Under these conditions the role of traction is extremely important.

KAL'KO. Powerful locomotives are indeed very necessary now. Every year we must increase the average weight of a freight train by 100 tons. We must also increase the compositional structure of the passenger trains: the immediate task is to run trains of 22--23 railcars each, and in the future--trains made up of more than 30 railcars. In tandem with this we will be increasing the traffic speed to 160 kilometers per hour. This is on ordinary tracks.

INOZEMTSEV. Naturally, such large-scale tasks could be solved by the next generation of machines. Even now on diesel-locomotive routes we run heavy-weight trains by utilizing multi-unit locomotives. Frankly speaking, this is not the best method, for it is connected with increasing the fleet and, therefore, also with additional outlays. By having such a diesel locomotive as the 2TE121, we could solve these problems more simply. In order to successfully cope with the hauls, it will be necessary to have in the very near future a fleet structure in which 40--50 percent would be occupied by diesel locomotives with a capacity of 4,000 hp and 25--30 percent with a capacity of 6,000 hp.

A complicated task? Undoubtedly. But let's remember the post-war times. That was a difficult period. Nevertheless, we made gigantic strides in the fundamental modernization of transport. Diesel locomotives played the deciding role. During a brief period of time we acquired a number of machines with capacities of as much as 3,000 hp.

In recalling this, I would like to praise the Kharkov Plant imeni Malyshev, the Voroshilov Plant, the Kolomna and Bryansk Plants--all those groups which, by their self-sacrificing labor, also determined progress in transport. Let me emphasize that all the problems were solved in close cooperation between the manufacturers and the users. Specialists from the industry made drawings of the assemblies directly at the depots, and they finished these assemblies

at the site. Unfortunately, after such successes we had a period of stagnation in the creation of powerful locomotives.

GIBALOV. Indeed, the industry was not able to "get off to a good start" and restructure itself. This was felt particularly keenly during the 1970's, when the need arose for increasing the unit capacity of sections, for a sharp increase in the reliability of the units, their economical qualities, a lessening of the dynamic effects on the track, and their metal consumption.

Speaking frankly, there was not a sufficient stockpile of scientific and technical projects in progress at that time. We were basing our work on previous achievements. We required five years to prepare the industry for restructuring. To create new electrical equipment, diesel engines, and interlocking electronic apparatus. These developments did find specific embodiments in the 2TE116 and 2TE121 Voroshilovgrad diesel locomotives. Traction units were provided instead of separate exciters and auxiliary generators. The flangeless truck began to appear. And the most important achievement--the coming into being of a quite successful traction drive with support-frame suspension, which transmits six tons of traction. As bench tests have demonstrated, it provides all the dynamic effects with greater reliability. And it fits very compactly into limited spaces. Just consider the following: the dimensions of the locomotive have remained practically unchanged since the post-war period, although the capacity has increased 4--6 times that of the entire diesel locomotive and the wheel-motor unit.

And it is here that the 2TE121 diesel locomotive has been the pioneer in the family of the new generation, and I would like to emphasize the fact that it was created with the active participation of specialists from the industry and from the Ministry of Railways.

PLOKHOTNICHENKO. This machine suits us Pechora locomotive engineers to a "T." Noise in the cab has been reduced to a minimum. Its wheels hardly ever spin or skid. There have been trips when the sand box did not have to be used at all. It picks up speed excellently with the train at its full weight of 5,300 tons. For serially produced locomotives the norm is considerably lower--4,600 tons. Electro-dynamic braking is a great advantage. Especially now, when the rails have become drifted over with snow, it makes the work of the crews considerably easier.

Fuel consumption amounts to 22.8 kilograms as measured, while on the serially produced locomotives it is 26.2. It should be noted that we have been operating with the new equipment only for a few months. And so the indicators could prove to be even better. There are a number of things to be noted. But, on the whole, the machine is fine. Thank you for it.

INOZEMTSEV. In my opinion, we can give high marks to this diesel locomotive. Solutions to a number of serious problems have been worked out on it, although there are some specific doubts with regard to the diesel engine itself. But with regard to the vehicle carriage the diesel-locomotive people have even bypassed the electric-locomotive people. The new design opens up the way to increase axle loading--and this entails both traction and adhesion reliability, as locomotive engineer Plokhotnichenko has noted entirely correctly. I think

that we need to be bolder in introducing this locomotive into operational use. Instead of the 2TE116 we should make the 2TE121.

GIBALOV. We dreamed and still are dreaming that the series of machines mentioned here will include the 6,000-horsepower locomotives, which, obviously, the recently designed mock-up model of the TE136 will also be. It has been created on the basis of the same-sized diesel engine, on the same principled solutions with regard to regulating the electric-power plants. Also utilized is a powerful rheostatic brake with 5,400 kW! With automatic speed maintenance.

For the sake of comparison let me state that a foreign locomotive with the same capacity has two diesel engines. The minimal weight is 260 tons. But we have a single-diesel, hood type, with a wheel diameter of 1,250 mm. It weighs only 200 tons, with a specific weight of 33 kg per unit of capacity. In short, we can be completely proud of this diesel locomotive.

QUESTION. Is this the same machine which railroaders have been waiting for?

KAL'KO. Not entirely. But with regard to many parameters it is close to what people have been waiting for. However, a new diesel engine must be used in it.

GIBALOV. In connection with this, we encountered certain, specific difficulties. It will be necessary to re-examine the number of axles and certain other parameters. In 1988 it is planned to turn out the first such 6,000-hp locomotive. It will be used as the basis for creating mainline diesel locomotives with capacities of 6,000 hp and more. Of course, as was stated here, with regard to traction force, we must conjoin with electric locomotives having a capacity of 10,000 kW in two units.

INOZEMTSEV. It seems to us that the Kharkov Plant, which has an enormous amount of experience in building diesel locomotives, for a time remained on the sidelines with regard to work to improve diesel engines. At present we have only one model of the D70 diesel. It has proved to be a serious competitor to the D49 with regard to fuel expenditure. Likewise with regard to reliability it obviously does not yield to anything. We would like to have the possibility of a choice. In the name of the railroaders I direct a request to the plant's group to give us several new D70's for extensive operational testing. You know, the D49 has already been fine-tuned for 15 years. There is a definite and serious shift. And, obviously, in conjunction with the industry, we will arrive at positive results. But this is still not what we need for the future.

KHLEBNIKOV. There has been talk here of increasing the speeds of passenger trains to 160 km per hour. Obviously, the diesel-locomotive sections will not remain on the sidelines either. The Kolomna Plant is building and planning machines capable of carrying out what has been outlined.

The inter-departmental commission has now accepted the TEP70 diesel locomotive with a capacity of 4,000 hp. An installation batch is being built. Finally, the 6,000-hp TEP75 was created, with a centralized electric-power supply for the train having a capacity of 800 kW. The load from the wheels onto the

rails in the first two experimental diesel locomotives was 23 tons. But we have tried to bring about a reduction of the dynamic effect. Unfortunately, finishing the power plant led to an increase in the locomotive's weight.

The client considers that this is impermissable for a speed of 160 km per hour. We have proceeded, therefore, to develop a variant of the eight-axle locomotive with the same capacity. We regret "abandoning" this successful machine. We are convinced that there will be a return to the six-axle TEP75. But only after the scientists adopt a new approach to evaluating effects on the track, precisely from the standpoint of dynamics.

Discrepancies with the new locomotive have shown that it is extremely difficult to increase capacity merely by means of the marine diesel engines being presented to us and within the strict norms for wheel loads on the rails. Therefore, we support the intention of the VNIIZhT to return to developing gas-turbine equipment. But for this purpose, special, gas-turbine engines must be made, taking into account the requirements of railroad transport.

KAL'KO. Against the background of ensuring mainline operations, the problem of switcher locomotives may seem somewhat more modest. But it only seems so. It is not simple to handle large trains at a station. Therefore, many years ago, together with the industry, we created the TEM7 diesel locomotive with a capacity of 2,000 hp. A fine machine was produced. But it is now being delivered to other sectors. And the railroaders at classification yards have been compelled to operate by means of two coupled diesel locomotives. We have ordered analogous diesel locomotives abroad. But at best they will be ready in about five years. And, as a result, we are losing 10 years.

MIKLUSH. We are prepared to begin developing the switcher-type diesel locomotives with capacities of as much as 3,000 hp which are needed by the Ministry of Railways. But so far we have not found a common language with the client.

KAL'KO. As is also the case on the mainline machines, everything again rests on the diesel engine. It must be efficient in operation and not difficult of access in servicing.

What "Pains" the Designer

Locomotive building has achieved such milestones that the direct transfer of apparatus from other sectors such as, let's say, aviation or shipbuilding to our transport has already outlived itself. We need equipment (ranging from instruments to diesel engines) which has been designed specifically for railroad transport.

GIBALOV. It was not by chance that my colleague from the Kolomna Plant said that, in order to create gas-turbine locomotives, special turbines are required which, so far, do not exist. The time is long past when we could put a marine engine or generator onto a locomotive. In my opinion, the causes for the failures of the last few years are partially contained in this. It is an important factor, and it must not be lost sight of.

QUESTION. Are there certain specific organizations on which the creation of such units depends?

GIBALOV. First and foremost, we must mention our own diesel-locomotive building sector. But we also have to coordinate the activities of many ministries--the Ministry of Instrument Making, Automation Equipment and Control Systems, the Ministry of the Electrical Equipment Industry.... The list could be continued.

KHLEBNIKOV. And a great deal rests on the coordination of documentation. In this respect, the Ministry of Railways is no exception either. Today the installation batch of the TEP70 diesel locomotives is being built, but the deliveries have not been coordinated with all the ministries. I consider it necessary to give the designer the right to choose any item being turned out in other ministries and to try out, at least, the experimental machines without any coordinated obligations.

FUFRYANSKIY. What else still "pains" a plant's chief designer? He is "pained" by that same diesel engine and by a certain circumstance which depends on us--the axle load. The time has come to re-examine our position with regard to capacity and traction. Because we railroaders, up to the present time, have been abiding by one of the old scientific positions with regard to setting norms for the load. How is the latter determined? By weight, in its static form. locomotives are dynamic things. They move rather than standing still. We must arrive at setting the norms by way of dynamics. And this is already a matter for the designer, whether the axle loads are 20 or 30 tons, as long as the dynamic forces have not exceeded those assigned. It is the duty of railroad science to overcome this barrier. Then matters in diesel-locomotive building will proceed better and more actively.

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RAIL SYSTEMS

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USE OF DIESEL ELECTRIC PARK AT INDUSTRIAL ENTERPRISES

Moscow ELEKTRICHESKAYA I TEPLOVOZNAYA TYAGA in Russian No 10, Oct 84 pp 34-36

[Article by I. F. Kozlov, deputy chief, Industrial Railway Transport Main Administration: "Use of Diesel Locomotives for Industrial Transport"]

[Text] At the present time, the expanded length of railroads at industrial enterprises comprises 137,000 km. The volume of hauls made on them exceeds 10 billion tons a year. This is 2.9 times as much as the volume of hauls being performed by general-use transport.

Over-All Status of Industrial Transport

In order to further raise the operational level of industrial transport, improve the use of technical means and particularly the rolling stock, there have been created and organized new, inter-sectorial, cost-accounting territorial associations (OPZhT's) and enterprises of industrial railroad transport (PPZhT's). Now in operation are 16 territorial associations, which include 151 PPZhT's. They serve more than 5,000 enterprises and construction projects of various ministries and departments and have already approached the half-billion mark in the volume of hauls of national-economic freight. In 1983 alone 190 enterprises and organizations of various ministries and departments were accepted for servicing, and 4 new PPZhT's were organized.

General schematics for the comprehensive development of industrial transport are being worked out and introduced, providing for the creation of territorial associations in the country's major industrial regions. The intent of these schematics is to organize new PPZhT's, eliminate small-scale transport workshops in order to reduce railcar demurrage at industrial sidings and to improve transport service. OPZhT's and PPZhT's are being created in Armenia, and their creation is planned in Georgia, Uzbekistan, the Western Siberian Petroleum and Natural Gas Complex, and in Khabarovsk.

On the whole, the technical outfitting of the main administration's enterprises with rolling stock, loading-and-unloading equipment, along with measures adopted by the main administration, allowed us to successfully cope with the assigned tasks for 1983. The state plan for last year with respect to the hauls and processing of national economic freight was fulfilled by 103.6 and 101.8 percent respectively.

The material-and-technical base of these associations is constantly being reinforced. Every year the main adminsitration's locomotive park is increasing by an average of 2.4 percent; moreover, the growth in the number of diesel locomotives with a capacity of 1,200 hp amounts to 14.8 percent a year, of diesel locomotives with capacities ranging from 750 to 1000 hp--to 10.4 percent, while the number of diesel locomotives with capacities less than 500 hp is decreasing by an average of 6.5 percent. During the 11th Five-Year Plan 198 new locomotives belonging to the TGM4 and TGM6 series were received, and prior to the end of this five-year plan it is planned to acquire another 130 locomotives belonging to these series.

The coefficient of using the inventory locomotive park for the main administration amounts to 0.6 and varies for the associations from 0.46 to 0.71. In the Sverdlovsk, Novosibirsk, and Krasnoyarsk Associations the inventory park is used at less than 50 percent. Much better (up to 70 percent) use is made of the locomotive park in the Groznyy and Kuybyshev Territorial Associations.

Rolling-stock productivity increased by 8 percent for 3 years of the five-year plan. The Krasnodar, Groznyy, Krasnoyarsk, and Kuybyshev Associations have increased the productivity of their locomotives over the last 2 years by 10 percent and more. Its reduction has been observed at the Leningrad and Volgograd OPZhT's.

The plan for 3 years of the five-year plan with respect to the volume of hauls by industrial transport was fulfilled by 101.6 percent and the volume of hauls increased by 17 percent. Freight processing grew by 7 percent. The value of the fixed capital increased annually by 3.8 percent on an average, while capital-labor ratio went up by 1.4 percent. Capital-output ratio, however, not only failed to rise but even declined by 1 percent, which bears witness to the unsatisfactory utilization of fixed capital. The greatest reductions in the use of fixed capital during the past 2 years was allowed by the Belorussian (by 16 percent), Moscow Municipal (by 10 percent), Vladimir (by 6 percent), and a number of other associations.

As a result of implementing the measures worked out for the five-year plan with respect to increasing labor productivity and economizing on labor resources, the growth of labor productivity for 3 years amounted to 9.2 percent, as compared with the plan amount of 5 percent. The profits plan for 3 years of the five-year plan was over-fulfilled. In 1983 the principal technical-economic indicators of the plan with regard to the Main Administration were fulfilled. Some 15 million tons were hauled in excess of the plan, and more than 5 million tons of freight were processed.

From the beginning of the five-year plan, railcar turnover increased by 18 percent, and the static load increased by 7 percent. Railcar productivity during this period remained at the previous level.

As compared with 1982, railcar demurrage was reduced by 0.18 hours (in 1983 it was 11.95 hours, while in 1982 it was 12.3 hours). However, the established norm for demurrage was overstated by 0.8 hours. The railcar demurrage norm was not fulfilled by the Volgograd, Kuybyshev, Kaliningrad, and Groznyy Associations.

A number of territorial OPZhT's have continued to utilize rolling stock in an unsatisfactory manner. The following have not coped with the established assignments with regard to increasing railcar productivity of their own parks: enterprises of the Kuybyshev, Kalinigrad, Ukrainian, Groznyy, and Belorussian Associations. There has been a reduction in the average output per mechanism by 4.5 percent for the main administration as a whole.

At the industrial transport enterprises the repair base has been strengthened; existing depots are being modernized, and new ones are being built. More than 30 million rubles a year are being invested in the development of the material-and-technical base. During the 3 years of the five-year plan 121 facilities were introduced for the main administration as a whole, including 106 facilities for production purposes. Put on line were 4 locomotive-railcar depots, 2 equipping facilities, 5 mechanical-repair workshops, 6 garages, and 8 everyday-service buildings. Since the start of the five-year plan 18,100 sq m of housing has been turned over for use. During the years 1984--1985 it is planned to introduce 134 more projects amounting to a total worth of 7 million rubles.

Industrial Diesel Switching Locomotives

Since 1958 the Lyudino Diesel Locomotive Building Plant (TRZ) has specialized in producing diesel locomotives with hydraulic transmissions and double-axle trucks. It has created an entire range of switching and mainline diesel locomotives in the TGM3, TGM4, TGM5, TGM6, TGM7, and TGM8 series, as well as mainline ones in the TGM16 and TG102L series. The serially produced TGM4, TGM4A, and TGM6A have already been awarded the State Badge of Quality for 10 years now.

During the 9th and 11th Five-Year Plans this plant designed and proceeded to turn out locomotives of a new (second) generation with electric transmissions. These include the switching diesel locomotives TEM7 (with a capacity of 2,000 hp, with 8-axle trucks and a.c.-d.c. electric transmissions) and TEM12 (with a capacity of 1200 hp and a group-type electric drive).

In connection with the fact that all the diesel locomotives were created at different times for different customers, they possess a large number of different assemblies and parts; this determines their rather low level of standardization and causes considerable difficulties in organizing the production, use, and repair of these machines.

In 1976 a decision was taken concerning the creation of a standardized series of industrial diesel switching locomotives with capacities ranging from 750 to 1200 hp. The Lyudino TRZ worked out a rough engineering plan with the technical and economic justifications for this standardized series; it includes the following diesel locomotives: TGM9 (to replace the TGM4), TGM12 (to replace the TGM6A), TGM14 (to replace the TGM4A), and TEM12.

This plant worked out the blueprints and produced experimental models of the TEM12 diesel locomotives with a capacity of 2,000 hp and electric group drive in 1978, the TGM9 with hydraulic, modernized (single-cycle) transmission in 1982, and the TGM12 with a capacity of 1200 hp in 1983. In 1984 provisions were made to develop the TGM14 diesel locomotive with a capacity of 750 hp.

In accordance with the outlined program, the plant during the 12th Five-Year Plan is scheduled to fully convert to the production of the standardized series of diesel locomotives, based on the following points:

fulfilling the requirements of the state standards for industrial and diesel switching locomotives, GOST 22339--77 and 24790--81;

a high degree of standardization of assemblies and parts, comprising 87.5 percent with respect to diesel locomotives as a whole;

high indicators of reliability and economy for the new locomotives;

widespread application in diesel-locomotive design of new advanced-engineering solutions;

significant reduction of expenditures for the manufacture, servicing, and repair of diesel locomotives.

Diesel locomotives of the standardized series meet the following basic requirements:

increased reserves of fuel, sand, water, and grease, ensuring routine outfitting no more often than once every 8--10 days;

improvement of visibility and viewing range from the locomotive engineer's cab;

possibility of running the diesel locomotive by one locomotive engineer without an assistant;

equipping the diesel locomotive with a compressor unit of increased productivity and an air mainline for unloading the self-unloading railcars;

use of flangeless trucks with magnetic-rail braking;

use of units for neutralizing exhaust gases;

maximal standardization of basic repair assemblies;

installing a conditioner unit in the locomotive engineer's cab;

improvement of anti-swaying and anti-skidding characteristics;

increasing the traction-operational characteristics in the cycles of starting, running, and reversing;

significantly increasing productivity and economy;

improving access to assemblies to be repaired.

Being installed on the standardized series of diesel locomotives is a modernized hydraulic transmission in two performing modes: a single-cycle mode,

providing a maximum design speed of 35--40 km per hour, and a two-cycle mode, providing a design speed of 70--80 km per hour. Long-range speed in an optimal schedule herein amounts to 7--10 km per hour.

In order to ensure the unloading of the self-unloading railcars, the TGM9 and TGM12 diesel locomotives have increased the productivity of the compressor units and increased (as compared to the TGM6A) the volume of the main tanks from 0.9 to 1.26 cu. m, i.e., by a factor of 1.4.

The difference between the TGM9 and TGM12 diesel locomotives consists merely in the fact that the former has installed a de-boosted-capacity 8ChN26/26 diesel. It produces a capacity of 750 hp when the wheel-valve is rotating at the maximum frequency of 810 r.p.m. This is achieved by increasing the motor resources of the diesel and by better coordinating the capacity and the traction power of the diesel locomotive.

In contrast to the TGM9 and TGM12 diesel locomotives, the TGM14 diesel locomotive has a shorter base, equal to 6,970 mm, and instead of a hydro-dynamic drive for the ventilator, it has an electric one.

A special place in the standardized series of diesel locomotives is occupied by the TEM12 diesel locomotive, equipped with a group-type electric drive. It has used for the first time in our country an electric transmission in combination with a group-type mechanical drive of the wheel pairs, fully standardized with the drive of the TGM6A diesel locomotives. This has allowed the TEM12 diesel locomotive with a coupling weight of 100 tons to actuate, when starting, a traction force like that of the TEM2 diesel locomotive, which has a service weight of 126 tons.

Diesel locomotives of the standardized series (TGM9, TGM12, TGM14, and TGM12), thanks to the use of a large number of completely identical and maximally standardized assemblies and parts, have achieved a high degree of standardization, comprising 87.5 percent, which exceeds by 58 percent the average degree of standardization in the TGM4, TGM4A, and TGM6A diesel locomotives being produced at the present time.

In operation the use of the standardized series of diesel locomotives yields an increase in locomotive productivity by 7--11 percent, fuel economies (per diesel locomotive annually) ranging from 12 to 21 tons, and a reduction of current outlays (per diesel locomotive annually) by an average of 10,000--15,000 rubles. The total savings effect to the national economy per diesel locomotive of the standardized series ranges from 26,000 to 52,000 rubles a year.

Organization of Repairs of the Locomotive Fleet

Now out of 151 PPZhT's, 118 have their own repair facilities for carrying out TO-3 and TR-1 work on diesel locomotives, as well as railroad-track-mounted cranes and railcars. Of these, 16 perform TR-3 current repairs. Diesel locomotives with electric transmissions are partially repaired at railroad depots of the Ministry of Railways.

About 35 percent of the total number of depots constitute single-bay areas with obsolete fittings and technical equipment. Insufficiency of space and repair

areas has made it necessary to carry out some of the repairs at the enterprises of other departments, and, when such a possibility is lacking, they must be done on the open tracks of the depot area. The capacity of the workshops for repairing wheel pairs, diesel engines, hydraulic transmissions, and other diesel-locomotive units is inadequate.

In accordance with the decision of the Technical-Economic Council of the Ministry of Railways the performance of the entire program of TR-2 and TR-3 current repairs is provided for in the support depots of the associations. They also perform TR-2 routine maintenance on diesel locomotives for the adjacent enterprises of other ministries and departments whose repair bases do not permit this kind of repair to be carried out. All types of technical service and TR-1 current repairs of locomotives, cranes on railroad tracks, and railcars are performed at operational depots, which exist in every inter-sectorial PPZhT.

As support depots use is made of the largest enterprises, which have mastered all types of repairs. When economically feasible, they are modernized or retooled. If an association has several support depots, they are specialized with respect to series of locomotives.

Provisions have been made for the major repair of diesel locomotives with electric transmissions to be performed at the following existing plants of the Ministry of Railways: Astrakhan, Chita, Ulan-Ude, Daugavpils, and Tashkent. In order to perform major repairs on diesel locomotives with hyraulic transmissions, it is planned to build new plants in the Ukrainian SSR, the Kazakh SSR, and the Central Region.

In order to develop a Glavpromzheldortrans [Industrial Railway Transport Main Administration] repair base, we must carry out the following measures:

modernization of the depot of the Odessa MPPZhT by means of organizing the paint and wheel shops so as to bring its design capacity up to 100 TR-3 maintenance repairs per year of diesel locomotives with electric transmissions and TGM6's;

modernization of the depot of the Togliatti MPPZhT by means of rebuilding the workshops for repairing hydraulic transmissions and wheel pairs;

construction of a support diesel-locomotive and railcar depot of 14 bays for the Leningrad OPZhT at the Kirpichnyy zavod Industrial Complex in accordance with the recommendation of the general scheme for the comprehensive development of the Leningrad Industrial Region.

Analysis of the Technical Condition of Rolling Stock

Analysis of the use of locomotives at PPZhT's has established the tendency to increase the percentage of reserve diesel locomotives. Thus, from 1981 through 1983 it increased by 1 percent. The summarizing indicator in evaluating the technical condition of the entire park and characterizing the level of repair organization and the condition of the repair base, as well as the degree of reliability of the locomotives, is the percentage of defective locomotives. This percentage is calculated for the operations park of the enterprises in

accordance with the TsUPZhT Order No 39, which excludes the influence on it of the number of locomotives in the reserve park.

For all the diesel locomotive series a tendency is to be observed toward reducing and leveling out the size of the percentage of defective locomotives. The greatest percentage last year was accounted for by diesel locomotives with capacities of 1,200 hp and more, which is to be explained by the improvement in the upkeep of diesel locomotives of lesser capacities.

Analysis of the constituent percentage of the deficient diesel locomotives has shown that last year its actual dimensions in all types of repairs (with the exceptions of TR-1 and TR-2) considerably exceed the normative amounts. Particularly great is the percentage in current TR-3 and major repairs (KR). Taking into account the fact that the program of TR-3 repairs and particularly KR for the main administration as a whole has not been fully assimilated, the excess of the percentage of deficient locomotives is to be explained only by the non-fulfillment of the demurrage norms in these types of repairs, and by considerable outlays of time on transport and waiting for repairs.

In order to reduce the total percentage of defective locomotives and bring its dimensions to normative values, it is necessary to concentrate the performance of the entire TR-3 and KR program at the repair bases of the main administration and the Ministry of Railways. Moreover, we must achieve a systematic reduction of the time spent in repairs, in waiting for them, and in turning over the locomotives ready for operation. We must also improve the quality of technical services and current repairs, and, on this basis, achieve a reduction of unplanned repairs.

Order No 39 of the TsUPZhT laid down an intentionally greater percentage of unplanned repairs (5), but it has not been maintained at the main administration's enterprises (6.3). This was caused, above all, by violations of repair technology and technical servicing, operating rules, and the maintenance and care of diesel locomotives.

Nor have the repair brigades fully carried out their work with regard to the technical servicing and repair of diesel locomotives. There is a lack of effective control over the work quality on the part of the crew-instructional staff. Diesel lubricating oils, fuel, and cooling water are not being used in accordance with the appropriate requirements of the technical specifications and instructions; and this has led to the diesel engines and other units of diesel locomotives going out of operation. The worst situations with regard to the technical condition of locomotives have taken shape at the Perm, Moscow Municipal, and Volgograd Associations.

The "Basic Directions for the Economic and Social Development of the USSR for the Years 1981--1985 and for the Period until 1990" have provided in the field of industrial transport for stepping up the pace of modernization and re-tooling, for improving the use of rolling stock, for achieving smoothness in loading and unloading freight, for expanding existing and organizing new enterprises involved in inter-sectorial, industrial railroad transport.

2384
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RAIL SYSTEMS

EFFORTS TO IMPROVE ELECTRIC LOCOMOTIVE PERFORMANCE

Moscow GUDOK in Russian 18 Nov 84 p 2

[Article by B. Belokosov, deputy chief of the USSR Ministry of Railways' Technical Main Administration: "Independent but Depending..."]

[Text] The Technical Main Administration examined the article under this headline published in GUDOK on 27 July and reports that the questions it raised concerning the need to further improve the tractive power and technical-economic indicators of the electric locomotive fleet are topical and are constantly at the center of attention of scientists and specialists in railroad transport and industry.

There can be various ways to solve this problem, including the use of independent traction engine excitation. It has been tested under traction conditions on experimental VL84 electric locomotives and three series-produced VL80r electric locomotives made this year. If tests are successful, the system will find use in future alternating-current electric locomotives in both traction and regenerative modes.

In future electric locomotives, tractive power and technical-economic indicators will be improved through the introduction of impulse control.

The development of I-type metro cars is under way, which will also solve the problems posed in the article. However, the operational introduction of metro cars with independently excited traction engines of the MEI [Moscow Power Engineering Institute] design can be approved only after testing an experimental consist developed by industry. Unfortunately, repeated requests by the Ministry of Railways concerning this have not been supported by specialists at Minavtoprom [Ministry of the Automotive Industry].

Jointly with the Subways Main Administration, the Technical Main Administration is continuing to search for ways of solving these tasks and preparing the appropriate appeals to Minavtoprom.

11574
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RAIL SYSTEMS

12-AXLE VL86F ELECTRIC LOCOMOTIVE IN DEVELOPMENT

Moscow GUDOK in Russian 25 Nov 84 p 1

[Article by I. Zin'kov, senior engineer, VElNII [All-Union Scientific Research, Planning, Design and Technological Institute of Electric Locomotive Building]: "The VL86F Electric Locomotive"]

[Text] Novocherkassk--In accordance with the program of the State Committee for Science and Technology, at the start of next year the collective at the Novocherkassk Electric Locomotive Building Works is to build an experimental model of the new VL86F 12-axle road freight a.c. electric locomotive with asynchronous traction engines.

The draft design for this machine has already been developed at VElNII. O. Zhukov, the chief designer, explains how this machine will look, and what will be its features compared to series-produced models.

"The 12-axle electric locomotive is a fundamentally new machine. It was designed in cooperation with the Finnish firm of Kiumi-Stremberg, long a partner with Soviet railroaders. Incidentally, for 10 years now the Novocherkassk Works has been jointly producing the SR1 electric locomotives, which are operated in Finland.

The VL86F will have asynchronous engines, enabling it to haul heavier trains. Copper use in the production of these motors has been reduced 3-fold. The labor intensiveness of their manufacture is 20 percent less, and that of their servicing during operation is 10-15 percent less due to the lack of commutators and brushes.

All the running gear on the VL86F is taken from the VL85. About 75 percent of the components and parts are standardized.

The new machine has regenerative braking and can go up to 120 kph. Shops at the Novocherkassk Works are intensively preparing for the production of the experimental model of the new powerful road freight electric locomotive.

11574
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RAIL SYSTEMS

VL-85 ELECTRIC LOCOMOTIVE R&D VERSUS BUREAUCRACY

Moscow PRAVDA in Russian 16 Dec 84 p 2

/Article by M. Kryukov, PRAVDA correspondent: "Parade Dress and Everyday Life: The Moral Meaning of Competition"/

/Text/ A large purpose makes people like-minded. A feeling of fellowship inspires confidence. The persons who created the new VL-85 electric locomotive have once again been convinced of this. "It was an inspiring victory," said one of them. Probably because their "baby," as concluded by the authorities, turned out to be the best in the world. Its creators see one of the reasons for success in the joining of forces, even though they themselves are "registered" in different departments. They concluded an agreement on trust, for the sake of a common end result. This agreement proved to be reliable. Thus, Pushkin's words: "Friends, our alliance is splendid!" also soared into the air.

But just what kind of agreement is this? And what kind of electric locomotive has been created?

In the documents regarding the new locomotive the following is stated: it is a type of electric locomotive which is new in principle, created for the first time in world practice. Operation of each one will yield about 200,000 rubles in savings for the national economy. It surpasses the serially produced electric locomotives with respect to capacity and traction power by more than a factor of 1.5.

Why did we need electric locomotives with such a capacity? The explanations by the specialists boil down to the following points: the volumes of railroad hauls are increasing. And to increase their throughput capacity is possible only by increasing the weight of freight trains. We need more powerful locomotives. Development of the Far North is proceeding apace. Previous types of locomotives will not be able to operate there; what is needed is an "acclimatized" one.

And so the VL-85 has appeared. Moreover, within a shortened time period: its creators beat the deadline by one and a half years!

But just what kind of alliance has increased people's strength ten-fold? Its name is the "Elektrovoz" Comprehensive Targeted Program, as created on the Don.

Enterprises and institutes have become parts of this complex.

"At first I didn't put too much trust in this agreement," frankly confided V. Yanov, the director of the All-Union Scientific-Research, Planning, Design and Engineering Institute for Electric Locomotive Building (VElNII). I thought that there would be a 'parade,' as is often the case: we'll sign, and then we'll all run off to our own 'corners.' But it turned out differently. We were all seriously 'infected' with the common cause."

"The organization has removed many problems," stated V. Zhukov, rector of the Rostov Institute of Railroad Transport Engineers (RIIZhT). "It's a great incentive to participate personally in bringing about an end result."

And what about the practical workers? They too turned out to be a motivated group.

"They considered it a duty for themselves to assist in the birth of the new electric locomotive," stated F. Kotlarenko, the chief of the North Caucasus Railroad. "The best locomotive crews were appointed to make the test runs."

The path to the new is not strewn with roses, and quite a few difficulties arose. Here is just one example.

At the Don they leaned toward the benefits of creating the so-called 12-axle, two-unit locomotive. But there were opponents to this idea. These opponents were not dried-out dandelions to be blown away but rather solid persons, with degrees. In order to insist on their own position and set forth weighty arguments, the innovators were compelled to pool their efforts. The RIIZhT staff members created a mathematical model of the electric locomotive. New engineering developments were presented by scientists of the Novocherkassk Polytechnical Institute. They built two test models of the locomotive at the Novocherkassk Electric Locomotive Building Plant--the main supplier of them in this country. Then, covered with sensing devices, these locomotives were tested out by still other partners in the complex--the railroaders.

And here in the USSR Ministry of Railways a session of the presidium of the scientific and technical council was held. Invited to participate in it were staff members of USSR Gosplan, the USSR State Committee for Science and Technology, and other specialists. The discussion ended with the approval of the 12-axle, two-unit locomotive. A victory for the Rostov people. It was also there that they learned with understandable pride about the letter, signed by the minister of railways and sent to USSR Gosplan: the ministry confirms the need to deliver precisely these locomotives during the 12th and subsequent five-year plans.

I had occasion to visit the Novocherkassk Electric Locomotive Building Plant. I saw the new electric locomotive. I walked through its steel interior and the apparatus which had been begun. I felt like telling it: "Intelligent minds created you, and skillful hands assembled you. Good luck on your journeys!"

And another thought came to me. More than 10 comprehensive, scientific and technical programs have been created in this oblast. They have designated the main direction in order to combine in the best way the efforts of production and science and to solve the task assigned by the party with regard to speeding up scientific and technical progress. And such programs are not limited merely to the creation, let's say, of a locomotive. The task is broader. Under the conditions of such a complex, theory and practice proceed in a more closely linked fashion, jointly solving many problems--ranging from the introduction of innovations to training personnel. In this cooperation there are neither chiefs nor subordinates. All are equal. But they must be united. One conscience. One responsibility--for the end result of the work.

It is a pity that things are not always that way. Quite often the "parade" still becomes the main thing. The essence of the matter is screened by a facade, by its form. And then the slogan no longer catches anything vital.

That's the way it happened, to a certain extent, in the well-known movement of the Rostov people under the slogan "Work without laggards." It began stormily and immediately claimed specific deeds for itself. In looking back, the following can be stated with certainty: this movement played a notable mobilizing role. It help to bring forward certain groups, aroused initiative, made us shake ourselves up and look more attentively into the future. "A feeling of a unified column was added," I was told by one plant director, "when we could keep abreast with the outstanding workers. But a column must have a banner." And the slogan "Work without laggards" was such a banner. Filled with specific contents, it bore a considerable charge within itself. Merging into this movement were other innovations--their feasibility could be reckoned almost mathematically.

In the first phase, nevertheless, the reserves which were put into circulation were those, in general, lying on the surface. They played their role, but it was necessary to proceed further. But work in depth was more difficult, and not everybody turned out to be up to it. But there was a desire to be ahead. Furthermore, an atmosphere was created whereby to work without laggards became a matter of honor. And many persons did work honorably. But not everybody. It was not just a matter of plans which needed more frequent adjustments. When they did not succeed in reducing them, they had recourse to juggling the books. The tasks assigned by the plan, the socialist pledges turned out to be, as never before, categories which were not merely economic but also moral. Later, when held responsible, some managers said the following: "We were not trying this for our own sakes. We did not want to let the oblast down." This was genuinely true--in an upside-down kind of way.

Nor did certain party committees prove to be at a very high level. Monitoring this movement presupposed a sensitive analysis of the state of affairs, positing a true diagnosis at all stages of its development and the adoption of timely measures. This was not always done. Why? There was not enough vital communication with people. At times more reliance was placed on paper documents and on administrative pressure. Hence also a formalism, a dereliction of duty, and sometime promises were quickly forgotten. And it was then that the "Work without laggards" movement began to slow down its forward progress.

The question arises: do the Rostov people need the movement today? Can they speed up its "turnovers"? Even now in this oblast there are quite a few lagging enterprises, workshops, and brigades. Can it really be that the good experience accumulated during these years does not suit them? The movement has been nourished by numerous innovations. Can it be that the need for them has fallen off? Most likely, the participants themselves would consider that some of these innovations need to be revised or examined to see which of them require further work or have not justified themselves, and which of them needs to be carried further.

For example, has not the initiative "Let's build it by the deadline and assimilate it ahead of schedule" remained urgent nowadays? A great deal of construction is being conducted in the oblast. Introducing projects by the deadline is one of the problems. For example, workers at the Zarechensk Experimental Plant for Reinforced-Concrete Products tell us the following: "We should be proud of our plant--for, you know, we furnish half of all the reinforced concrete for the land-reclamation specialists of this oblast. But so far there is nothing to be proud of--we won't reach our planned capacity at all."

Or take, for example, the so-called pairs competition among livestock raisers. Has it lost its intent these days? By no means! But who engages in it? In the obkom of the agricultural workers trade union we found a record of pairs competition among milkmaids for only one of the rayons, and this was seven years old. It is reckoned that this oblast has at least 6,000 pairs of livestock raisers taking part in such competitions. For example, in the Ust'-Donetskiy Rayon, according to the records which they have in the trade-union obkom, 326 pairs of milkmaids, swineherds, and cowherds are competing. But the Secretary of the Ust'-Donteskiy party raykom clarifies this as follows:

"There are practically no competing pairs at present. Why? The leading milkmaids began losing out in the matter of wages And this is a necessary matter. Now our economists are deciding how to pay for the work of these pairs more correctly."

What is the matter here? In pairs competition the leading milkmaid acted as a kind of patron of the laggards. The standing in the competition for such a pair was determined by the results of their joint work. The milk yield of both went into a common "pot." It often happened that the wages were divided almost equally.

"At a seminar we corrected our comrades," someone recalled in the trade-union obkom.

In short, the initiative began to wither. However, in places where it was handled with intelligence, without stereotypes, it turned out to be useful. I am far from the idea of further multiplying paper documents and introducing additional systems of reporting. But the trade-union organ must keep its finger on the pulse of innovations. In order to take note of changes and tendencies, to issue timely warnings against errors and miscalculations.

"Average workers." There are quite a few of them in any group. Since they do not "come up to" the outstanding workers, they get used to being in the shadows. Who is praised, they say, when the results are summed up? The outstanding workers. Who is criticized? The laggards. But the "average workers" are in a kind of neutral zone. And so some of them, for various reasons, are not moved to experience any splendid feeling of victory. To elevate their labor activity, to take note of everyone, to inspire them to perform more productive work--is this really not an urgent task? A great deal of energy could be brought to life.

Who has the capacity to do such a thing? Competition! And Rostov-on-Don has the experience. Some time ago A. Isayev, a gear-cutter at the machine-building plant and a winner of the USSR State Prize, proposed a so-called "graded method" in labor competition. When organizing a competition within a group, they began to account more precisely for the mastery, skills, age, and even state of health of its participants. In accordance with this, the competition itself was set up by sub-groups--each one had its own records and its own winners. And so suddenly at the machine-building plant they began talking about those persons who had never before heard a word of praise about themselves. This was a festive occasion for people. And for their families as well. The method of graded competition has taken root at this plant. A few days ago I spoke with A. Isayev:

"We recently held another ceremony for handing out diplomas," Aleksey Petrovich told me. "Some people had tears in their eyes. One woman came up to me, clutching her diploma to her chest, and said: "This is the first time in my life that I received a certificate. It is such a joy!"

It is a pity that other enterprises scorn this method.

Again I recall the VL-85 electric locomotive. It is also the "child" of competition. Of its unifying force. Of its moral loftiness. Of everyday labor which recognizes only one "parade"--that of results. A victory parade. It does not matter whether this is a big or a little victory.

2384
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MARITIME AND RIVER FLEETS

OFFICIAL ON AGING MARITIME FLEET, SHIP REPAIR TASKS

Moscow MORSKOY FLOT in Russian No 1, Jan 85 pp 41-47

[Article by V. Pervov, chairman of the V/O Mortekhsudoremprom (not further identified) and Collegium member of the Minmorflot (Ministry of the Maritime Fleet): "Fleet Replenishment and Repair"]

[Text] Among the tasks set by the party and the government before maritime transportation are also improving the use of the fleet, ports and SRZ [ship repair plants] and raising cargo shipment efficiency and export of transport services; replenishing the fleet with highly efficient specialized vessels, including Arctic navigation vessels and icebreakers; and increasing capacities of ship repair enterprises. These tasks must be solved in the 11th and 12th Five-Year Plans by using fixed capital more efficiently and directing capital investments allocated to the sector toward rational replenishment of maritime transportation's technical means.

The distinctive feature of the sector's fixed capital renovation for part of the fleet for the 1981-90 period is the significant increase in expenses. This is a result of the improved quality and degree of perfection of vessels, their specialization and the need to fulfill new national and international requirements with respect to navigation safety, environmental protection, labor safety practices, sanitation and so forth.

On the strength of this and in view of the planned moderate growth of capital investments in the fleet, the absolute extent and rate of increase and tonnage replenishment in the 11th and 12th Five-Year Plans are being substantially slowed down. If during the years of the 10th Five-Year Plan the transport fleet was replenished with 235 new vessels with an overall deadweight of about 4.2 million t, then the expected volume of new replenishment in the 11th Five-Year Plan will amount to only 175 vessels with overall deadweight of about 2.8 million t or about 67 percent of the 1976-80 replenishment. The replenishment program in the 12th Five-Year Plan is developing at approximately the same level and even lower.

As a result, the fleet is intensively aging--today, the average age of transport vessels is already 14 years. Taking into account the expected replenishment of the fleet and the planned write offs of the worn out tonnage, the deadweight of the transport fleet by the end of 1985 will amount to 19.3-19.4 million t,

and by 1990 it will decline somewhat. Improvement of the fleet's structure, specialization of vessels and optimization of their technical and operational parameters, which make it possible not only to make up for the written off tonnage but also to raise the carrying capacity of the fleet as a whole, are now gaining special significance during formation of a program for the replenishment of the fleet.

The structure and dynamics of the transport fleet's new replenishment are planned based on the necessity of further development of progressive transportation and technological systems, such as ro-ro, container and lighter systems, which make it possible to substantially raise transport efficiency and carrying capacity of the fleet, and besides, to radically change the social conditions and the nature of port workers' labor as a result of comprehensive mechanization and automation of cargo handling operations and to reduce the need in manpower.

A characteristic feature of the fleet's new replenishment, which is being carried out jointly with the V/O Sudoimport [All-Union Association for the Import of Ships] of the Minvneshtorg [Ministry of Foreign Trade], is increased specialization, as well as increased share of dry cargo tonnage (from 43 percent in the 10th Five-Year Plan to 66 percent in the 11th Five-Year Plan). An important place in this case is given to multipurpose and Arctic dry cargo vessels of active ice navigation, containerships, ro-ro vessels, refrigerator ships, railway ferries and others. Out of the 40 types of vessels, which are being built in the current five-year plan, 25 are being built according to new designs.

The highly productive multipurpose vessels, which combine in themselves the features of a general purpose vessel, a bulk carrier and a containership with vertical and horizontal methods for conducting cargo handling operations, will be considerably developed in the 11th and 12th Five-Year Plans. The share of these vessels in the composition of general purpose ones will increase from 9 percent in 1980 to 32 percent in 1985.

The typical representatives of vessels of this architectural-design type are the motorships of the "Astrakhan'" series (with a deadweight of 18,000 t each), which are supplied in the current five-year plan from the GDR, as well as the icebreaker-transport active ice navigation vessels of the "Noril'sk" type (with a deadweight of 14,500-20,000 t each), which are built in Finland. The building of such vessels as well as of a new multipurpose vessel with a deadweight of 10,000 t, whose design is being developed, is also planned in the 12th Five-Year Plan.

Altogether, 41 general purpose and multipurpose vessels with an overall deadweight of 454,500 t will be received during the current five-year plan, including 15 icebreaker-transport vessels with an overall deadweight of 211,500 t. It should be noted that among the latter, besides motorships of the "Noril'sk" type, are Arctic supply vessels of the "Mud'yug" type, delivery of which was carried out in the 11th Five-Year Plan. In addition to increased ice performance, its other distinctive feature is its fitness for roadstead unloading with the aid of a helicopter and an air cushion platform, which are based on the vessel.

Specialized dry cargo vessels represent nearly 54 percent of the composition of their group: 5 types of ro-ro vessels, 3 types of containerships, 3 types of hauling lighters (including one type, which was leased on the conditions of bare-boat charter), railway ferries for the Caspian and refrigerator ships (including 3 with a capacity of 10,000 m^3 each, which were ordered in Denmark). The overall deadweight of the 55 specialized vessels, which are being supplied in the 11th Five-Year Plan, amounts to nearly 540,000 t. During the 12th Five-Year Plan, it is planned to commission the USSR-GDR ferry crossing, for which three railway ferries with a two-level roll up of railcars will be built in the GDR. Ro-ro vessels will also be supplied.

The refrigerator fleet will be replenished (in addition to those already under construction) with vessels of 2,500 and 4,000-5,000 m^3 capacity each (of the UL class) for operations in shallow water ports in the Far East.

There are plans to build UL class timber and packaged cargo carriers of two tonnage groups: with a deadweight of 7,000 and 4,000 t each.

During the 11th Five-Year Plan, the bulk carrier fleet will be replenished with 32 new vessels with an overall deadweight of nearly 870,000 t, including 29 vessels being built according to new designs of which 6 vessels are of the "Khariton Greku" type (with a deadweight of 52,800 t each); 14 are of the "Mikhail Strekalovskiy" type (with a deadweight of 19,500 t each) and 9 are of the "Khudozhnik Moor" type (with a deadweight of 25,000 t each), 3 of which are adapted to haul cement. Construction of vessels of the aforementioned first and last types will be continued in the 12th Five-Year Plan. Moreover, domestic-built vessels for hauling hot sinter will also be supplied.

The tanker fleet will be supplied in the current five-year plan with new "ecologically clean" tankers of the "Pobeda" type (with a deadweight of 65,000 t each) and the "Dmitriy Medvedev" type (with a deadweight of 26,000 t each), which meet the increased environmental protection requirements.

The fleet will also be replenished with 5 Arctic navigation tankers of the "Ventspils" type (with a deadweight of 5,000 t each), which are being supplied from Finland, and 12 tanker-produce carriers of the "I. Broz Tito" and "Ludvik Svoboda" type (with a deadweight of 16,500 t each) from the SFRY. These tankers are equipped with submersible hydraulically driven cargo pumps which facilitates the washing of tanks. The "Ludvik Svoboda" type tankers are in addition adapted to hauling methanol and have a special purpose power unit with medium-speed engines, which operate as diesel-generators in the layover condition for servicing cargo handling operations. Construction of this type of tankers will be continued in the 12th Five-Year Plan. Moreover, Finnish firms are developing designs of a new ULA class Arctic tanker with a deadweight of 17,000 t and an UL class small Arctic tanker with a deadweight of 2,500 t for construction during the 12th Five-Year Plan. There are also plans for building chemical cargo carriers with a deadweight of 6,000 t for hauling superphosphate acid and second and third category chemical cargo.

The passenger fleet has been replenished with three motor vehicle and passenger ferries of the "Dmitriy Shostakovich" type. Two more vessels of the same type

with a modified bow end will be supplied in the years immediately ahead. In the 12th Five-Year Plan, there are plans to supply from the PNR [Polish People's Republic] 2-3 liner passenger vessels with a capacity for 1,500 passengers each, the "Iveriya" type catamarans and passenger coastal navigation boats (for 130 passengers each).

During the 11th and 12th Five-Year Plans, the health resort fleet and local lines will be replenished with new high-speed passenger hydrofoils of the "Al'batros," "Tsiklon" and "Voskhod-2" type.

During the 12th Five-Year Plan, 2 training sailing vessels of the "Dar Molodezhi" type for 130 students each will be built in the Polish People's Republic (according to a Polish design). In the prospect there is a certain lowering of the average proportionate share of power ratio of general purpose vessels and mass dry cargo-hauling vessels, which is explained by the lowering of the upper limit of economical speeds, achievements in the selection of optimal lines and the raising of the propulsive KPD [efficiency factor]. Besides transport vessels, a program for the replenishment of the icebreaker, dredging and auxiliary fleet is also being implemented, taking into account the reduction in the types of vessels and craft, the increase in the series production system and the increase of specialization. Development of this fleet should ensure improved service and reduce the layover of transport vessels in ports and during roadstead unloading as well as extend their operational periods and ensure safe navigation.

The accelerated development of rayons in the Far North and the development of the region's natural resources, make it necessary to expand the periods of navigation right to year-round on the entire length of the Northern Sea Route. This requires strengthening of the composition of the icebreaker fleet.

Equipping ship repair plants and fleet technical service bases with floating technical means of various purpose is of great significance for reducing the repair time of transport vessels and raising the quality of repairs. The arrival of vessels and craft for servicing local transport and passenger shipments and the lighter system as well as for environmental protection is increasing. The nature of all kinds of servicing of transport vessels and as a consequence the need for auxiliary vessels of various type remains the same as in previous years.

The sector receives more than 250 various vessels and craft of the non-transport fleet annually. The fleet of shipping companies will be replenished with passenger vessels of 80-300 seat capacity for local routes, various purpose boats, fecal waste and bilge water collectors, oil clean sweep devices, port refrigerators, oil-servicing craft, water carriers, maritime barges, scows, lighters, air-cushion platforms and other craft.

The river fleet in the Danube basin is also being replenished: 15 self-propelled dry cargo pusher boats with a carrying capacity of 1,200 t each, pusher tugs with 2,000 and 3,240 horsepower capacity, port tugboats, barges with a carrying capacity of 1,600 t and other vessels have been put into operation.

Specialized vessels for the processing of hauling lighters in unequipped places (side and harbor tugs, floating berths and auxiliary craft for lighter bases) will enter service for the lighter systems.

The solution of tasks on raising efficiency of the transportation process and intensification in the utilization of fixed capital is closely linked with acceleration in introduction into maritime transportation of scientific and technical progress achievements. Special attention is devoted to raising the reliability of vessels and their equipment, which predetermines the fleet's operations efficiency and safety of navigation, at all stages in the realization of the fleet replenishment program.

With the rise in the degree of technical perfection, structural complexity of vessels and their equipment, growth of power ratio and introduction of automation (and corresponding growth in the cost of vessels), an increasingly important role is played by choosing the proper relationship between reliability and price which is paid at the time of acquisition of a vessel as well as during the period of its operation. This, as well as the multiplan nature of tasks with regard to introducing scientific and technical progress achievements on vessels of the new replenishment, determine, during a vessel's designing stage, the need for a thorough economic appraisal with due regard for the technical necessity, the level of reliability, the experience of utilization (if such exists), the value and the economic expediency.

The distinctive features of the new replenishment fleet from the standpoint of introduction of scientific and technical progress achievements are as follows: fitness of vessels for high-speed cargo handling operations; increasing of specialization (the share of specialized vessels in the composition of the dry cargo fleet in the 11th Five-Year Plan will amount to approximately 54 percent); beginning of introduction of a new lighter hauling system with LASH-type lighters (the motorship "Aleksey Kosygin"); designing of the "Noril'sk" type multipurpose icebreaker-transport ships of high ice performance and the "Dikson" type Arctic supply vessels, which are most suitable for operation under severe Arctic conditions, including for roadstead unloading conditions owing to the use of air-cushion platforms and helicopters; and maximum opening of holds and utilization of smooth-wall hold structures on vessels of the type such as the "Noril'sk," "Vitaliy D'yakonov," "Astrakhan'," "Yuriy Klement'yev" and others. Among the features of the new fleet are also the replenishment with "ecologically clean" tankers of the "Pobeda" and "Dmitriy Medvedev" type; utilization of new types of cargo systems with submersible pumps on tankers of the "I. Broz Tito" and "Ventspils" type; providing for the possibility of simultaneously fulfilling cargo handling and ballast operations virtually on all tankers of the new replenishment as well as on vessels of the "Khariton Greku" and "Khudozhnik Moor" type and developing vessels with atomic power plants; growth of the average power ratio of transport vessels; and use of power units with low-speed diesels (66.3 percent), including new generations (DKRN-7) with reduced relative fuel expenditure (up to 140 g/hp · hour), and as a consequence--the overall reduction of the weighted mean of relative fuel expenditure for the fleet from 162 (g/hp · hour) in 1980 to 157 (g/hp · hour) by 1985.

The new replenishment fleet is characterized by operation of power units on high-viscosity (up to 3,500 of Redwood 1 at 100°F) inexpensive grade fuel; by raising the degree of waste-gas heat utilization of main and auxiliary internal combustion engines and cooling water heat, including the use of utilization turbogenerators on vessels of the type such as the "Pobeda," "Aleksey Kosygin," "Khariton Greku," "Dmitriy Medvedev" and others; by using VRSh [adjustable-pitch propellers] on 34 percent of transport vessels (total capacity of units with adjustable-pitch propellers by 1985 has reached 1.2 million horsepower or 12.5 percent); and by using shaft generators on vessels of the type such as the "Anatoliy Vasil'yev," "Skul'ptor Konenkov," "Kompozitor Kara Karayev," "Ludvik Svoboda," "Boris Polevoy," "Anatoliy Zheleznyakov" and others with an overall total capacity of more than 26,000 kW. Besides this, the new fleet is characterized by introduction of principally new propulsive units with the use of hydraulic couplings of regulated filling, which make it possible to maintain constancy of the momentum on the propeller shaft and adjustable-pitch propellers of special ice design on the "Noril'sk" type icebreaker-transport vessels; by introduction of water safeguarding equipment, which ensures prevention of environmental pollution, and means of automation, which ensure fulfillment of requirements of the USSR Registry of Shipping for class A1 (duty watch-free servicing of the engine room) or A2 (with one watch in the TsPU [central control post]); and by broadly using on the imported vessels the DAU GD [automatated remote control horizontal range], the automated remote control horizontal range-adjustable-pitch propeller systems and centralized control and diagnostics systems with the use of microprocessors, which are notable for high reliability.

Also characteristic of the new fleet is standardization of the automated control systems; introduction of highly reliable liquid cargo control systems, which operate on the radiolocation principle (the SUM-21 type of the SAAV firm) on domestic tankers of the "Pobeda" and "Dmitriy Medvedev" type from 1984 as well as on tankers which were built abroad; utilization of the "Opti-Trim" type fuel expenditure optimization systems on refrigerator vessels with load-carrying capacity of 10,000 m^3 each, which were ordered in Denmark; mass utilization of brushless generators, highly economical induction motors, main distribution boards of modular design and so forth; and improved safety and reduction of labor expenditures when working on ship deck mechanisms by using remote dropping of anchors from the wheelhouse on all large vessels, bitts with rotating bollards, fastening devices and remote casting off of "towing feelers" on ice navigation vessels and others.

Among the distinctive features of the new replenishment vessels are also the following: improved propulsive qualities of vessels as a result of the improved hull shape and hydromechanical characteristics of screw and rudder complexes, which ensure reduction of fixed capacity and improvemen. of fuel utilization indicators; improved living conditions (assigning single cabins with all conveniences to all crew members on large ships, arranging sports cabins and facilities for individual studies and overall improving of comfort conditions, including reduction in the noise and vibration levels in living quarters); and introduction of modern radio and electrical radio navigation equipment, which ensures the necessary navigation safety and stable telephone and printing communication.

Introduction of scientific and technical progress achievements on the new replenishment vessels can be regarded as satsifactory and the technical level of the vessels being built as a whole meets the contemporary world standard.

At the same time, although the quality of design treatment is not inferior to foreign analogues, some of the equipment on domestic-built vessels and vessels of some other CEMA-member countries is not up to standard. Thus, low-speed diesels are not sufficiently perfected, reliability of medium-speed ship engines is poor, production of reducer units is lagging and production of high lifting capacity ship cranes (including those for completing Arctic vessels) as well as of means of ship automation is not being mastered. Moreover, some ship equipment is not being produced in CEMA-member countries at all, which makes it necessary to use equipment from capitalist countries and makes operation of vessels more difficult and expensive.

To raise the technical level of new vessels the V/O Mortekhsudoremprom [not further identified] together with the Leningrad TsPKB [Central Planning and Design Bureau] and other organizations of the Minmorflot [Ministry of the Maritime Fleet] is conducting constant work with suppliers and manufacturers of ship equipment with respect to raising quality and reliability of items being produced as well as developing and designing new models of ship outfitting equipment at the level of the best foreign analogues and even exceeding them.

In our sector there are several tens of ship repair plants (SRZ), which not only ensure proper repairs of the fleet but also the growing needs of the sector in building low-tonnage auxiliary vessels and craft and in manufacturing replacement and spare parts for ship and port mechanisms, containers, trailers, load-lifting devices, anchor chains, castings and forgings of all kind and other machine building production.

In the past few years, the fleet has grown quantitatively and changed qualitatively. At the same time, the rate of fleet replenishment has substantially declined, and writing off vessels, which have worked normative periods, is being delayed. As a result, a steady tendency toward aging of the fleet has appeared. If in 1970 the average age of the dry cargo fleet was 7.9 years and of the tanker fleet 7.5 years, then in 1983 it amounted correspondingly to 14.2 and 14.7 years.

The growth in the number of transport vessels, their deadweight and the aging and growing technical complexity of ships have caused a constant increase in the volume of technical services and repairs of the fleet. Measures aimed at improving the system of its technical operation and repair were adopted to ensure efficient operation of the fleet. The number of vessels operating according to a 4-year operation and repair cycle has increased from 1,180 in 1970 to 1,700 in 1983. The volume of technical servicing of the fleet in operation has increased from 17.3 million man-hours in 1975 to 24.8 million man-hours in 1983. The supply of the fleet with replacement and spare parts has improved, and the replacement stock of equipment for fleet repairs has increased in shipping companies. The development of ship repair plants continued.

From 1975, the fixed capital of ship repair plants has increased 1.5-fold, production capacities have increased by 37.5 percent and the output of production in normalized value of processing by 1.5-fold and in current prices by 1.4-fold. In 1984, labor productivity in ship repair plants has risen by 49 percent over 1975 and average wages have increased by 26 percent in this period; the share of production increase as a result of increased labor productivity will amount to approximately 90 percent. Brigade forms of labor organization and control and organization of production were improved. As of 1970, the average daily output norms in ship repair have increased by 30 percent and were fulfilled by plants, which accelerated repairs of the fleet. A plan for reorganizing operating capacities of ship repair plants by using capital repair funds has been developed, confirmed and is being realized.

Improvement of technical operation and repair of the fleet (despite its aging) has made it possible to reduce the repair time for a long period. In 1970, it amounted to 9.6 percent, including 8.3 percent for the dry cargo fleet and 11.6 percent for the tanker fleet; in 1979, it reached 7.3 percent, including 6.7 percent for the dry cargo fleet and 9.2 percent for the tanker fleet; and in 1983, it increased to 8.8 percent, including 7.8 percent for the dry cargo fleet and 11.8 percent for the tanker fleet.

The growth of physical volumes of repairs on vessels as well as shortcomings in planning and organizing repairs of the fleet (long periods of preparation for repairs, idling of vessels in waiting for repairs, accidents, overloading of ship repair plants with ship repairs and others) have led to an increase in the repair time during the past few years.

Insufficient replenishment of the fleet, increased repair costs as well as of volumes of work in connection with the necessity of making vessels conform to SOLAS-74 and MARPOL-73/78 convention requirements, elimination of design shortcomings on vessels of new series ("Krym," "Samotlor" and others) and ice damage in connection with the increased shipments in the Arctic and the increase at ship repair plants of volumes of ship building and machine building (containers, means of ship repair and port mechanization, replacement and spare parts and others) as well as ship repairs for outside customers and insufficient development of ship repair plants have led to the formation of a considerable shortage of capacities in ship repair.

Despite a certain development of plants and improvement in the organization of ship repairs, some problems still remain unsolved: a disproportion of capacities in shops has developed (hull and piping shops and steel foundry production are lagging in development); there is a shortage of berths at some plants and docks are arranged inefficiently, specialized highly productive ship building and machine building facilities have not been established and technical service bases have not been properly developed; a large relative share of obsolete and worn-out equipment is retained; and plants are not fully prepared technically and technologically for repair of the new replenishment vessels. There are also other problems. Despite the general growth in the level of mechanization of production processes, the most labor-consuming and difficult technological operations (hull and piping) have not been included in comprehensive mechanization; the indicator systems of planning, appraising and economic stimulating

the production activity of ship repair plants are in need of further improvement; and manpower turnover is extensive and plants are insufficiently staffed with skilled personnel in some fields of specialization (hull builders, welders and pipe fitters).

Plans for the development of ship repair plants in the 12th Five-Year Plan are directed at solving these problems. As a result of modernization and development of existing enterprises, a further increase in production capacities of ship repair plants is planned. It is planned to increase production areas of shops by 90,000 m^2 and the length of ship repair berths by 220 m.

In 1985, a new floating dock should be put into operation at the Novorossiysk Ship Repair Plant, and several more docks by 1990. In 1987, it is planned to fully master the capacities of two new lighter building shops (in Loksa and Slavyanka).

According to preliminary plans for the 1986-90 period, the value of the basic production capital of ship repair plants and the volume of production output in normative value of processing should increase.

It is planned to increse labor productivity and average wages. It is also planned to gain nearly the entire increase in production output by increasing labor productivity.

At the same time, it will be necessary to somewhat increase the number of personnel at ship repair plants, which will be a difficult task in view of the existing manpower shortage.

The underway development of production capacities of ship repair plants could make it possible to eliminate the deficit which has developed in ship repairs by 1988-89, if the writing off of obsolete tonnage is carried out at the planned rate. Unfortunately, the sector is faced with the necessity of further delaying the writing off of a considerable number of transport vessels in the 12th Five-Year Plan, which, undoubtedly, will make the problems of ship repair more acute. Therefore, it will be necessary to do a lot of intensive work on making plans for the development of ship repair plants more precise, both during preparation of the national economic plan for the five-year plan as a whole and its annual plans. Much depends here on the initiative and understanding of the importance of this task locally--in shipping companies and plants. The need for repairs must be reduced through competent, rational and accident-free operation of vessels, keeping them in good technical condition and by increasing technical servicing by coastal bases to the maximum. It is also necessary to realize all possibilities and reserves for the development and efficient utilization of ship repair capacities of plants for the needs of the sector. In this case it is necessary to bear in mind that solution of the task consists not in the construction of new or considerable expansion of old ship repair plants. The existing production capacities of plants as a whole are sufficient for the needs of the sector, but they are still being used only 85 percent.

An analysis of production capacities utilization indicates existing disproportions and "bottlenecks" between leading production subdivisions. The existence

of disproportions is the first basic reason of insufficient utilization by some plants of available production capacities. In order to eliminate disproportions it is necessary to specialize and through this to raise productivity of construction and machine building facilities and to ensure conformity of the production structure of ship repair capacities with the structure of necessary repair work on vessels. In particular, it is necessary for this purpose to eliminate the lag in the development of hull, piping and dock shops and to ensure plants with harbor moorages, including for large-capacity ships.

The second, and no less important, reason which restrains the use of production capacities is the shortage of workers at most plants, especially those in scarce fields of specialization. To solve this task it is, obviously, necessary to improve the supply of plants with housing and dormitories for young workers and workers with small families, to organize training, education and enlisting of young workers in all possible directions, to improve social and daily life conditions at ship repair facilities and to solve some social questions, which are connected with work of ship repair workers so as to make this work more attractive and efficient.

It is important that, at all levels of management in the sector and in all links, the people are made to realize that the solution of the most serious problem--ensuring ship repairs--depends on their labor. In the final analysis the technical condition of the fleet, its efficiency, reliability and, finally, the work results of the whole sector depend on correct, prompt and efficient solution of this task.

9817
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MARITIME AND RIVER FLEETS

SHIPPING COMPANY CHIEF ON 1984 AMUR RIVER WORK

Moscow VODNYY TRANSPORT in Russian 3 Jan 84 p 1

[Article by A. Sukhov, chief of the Amur River Shipping Company: "They Passed Examination"]

> [Text] Last year nature gave a difficult examination to river fleet workers on the Amur. Torrential rains caused unprecedentedly large floods in the basin. A. Sukhov, chief of the Amur River Shipping Company, discusses how this influenced fulfillment of navigational plans, what water workers did to counteract the forces of nature and what problems had to be solved.

The last navigation season was very difficult. The collective had to work a good third of its operating time in extreme conditions.

Above-plan haulage amounted to 600,000 tons of freight, the freight turnover was 110 million ton-kilometers and 1.4 million tons of freight were handled in ports. Standard fuel savings exceeded 1,200 tons. We handled the 1984 navigation season harmoniously through the timely operational introduction of fleets and port operations according to the planned schedule. Crews and brigades were staffed with personnel. Coordinating councils at transport centers intensified their control over the decisions made.

An important role was played by supporting shipment plans with real freight flows, and the fulfillment of targets for loading tonnage on return runs, first of all coal ships and the foreign fleet. There were considerable increases in haulage by the group work method for crews following intensified norms for traffic schedules.

All this made possible a good pace of work in the initial period of the navigation season and the haulage of additional hundreds of thousands of tons of freight, the exceeding of targets for the transport of passengers and the delivery of freight for agriculture. Port workers also worked successfully. The collective was awarded the Challenge Red Banner of the Ministry of the River Fleet and the central committee of the sector's trade union and monetary prizes for results during the first half of the year.

Of course, during this time, we did not foresee the impending difficulties. Already in August, the forces of nature hindered plan fulfillment on the most important indicators.

To the collective's honor, it was relatively quick in adapting to the unusual conditions. The socialist competition, which has expanded in the basin in honor of the 40th anniversary of the Victory, acquired new force. Increased obligations were assumed in honor of this famous date. Workers at the Blagoveshchensk Port and the fleet's repair and operating base rapidly restored flooded facilities. Poyarkovo port workers worked smoothly. While high waters flooded the old berth, they effectively operated the coal transfer complex.

The group work method once again showed its advantage. Take, for example, the labor competition between the Blagoveshchensk and Khabarovsk groups on the Poyarkovo--Komsomolsk-na-Amur coal line. Led by captains-brigade leaders A. Yefremov and A. Zaloga, the crews steadily delivered barges for loading and unloading, reduced running times on routes and delivered thousands of tons of additional fuel for the kray's power engineers. Thanks to a 15 percent improvement in these groups' labor productivity, we were able to switch some of the Design 576 Stoletov-type ships from coal lines to other freight.

We first began to use the group method for hauling gravel. Good results were obtained at the Komsomolsk Port by mixed brigades of crews from pushboats-tugs and floating loaders working on a single order. The group led by captain-brigade leader A. Paykov was the most effective in utilizing the labor organization method, collective responsibility and evaluating the contribution of each crew according to the group's KTU [coefficient of labor participation].

During the navigation season, more than 45 percent of all freight turnover transportation operations was performed by the group method.

The crew of the OT-2068, a diesel ship which delivered about 215,000 tons of coal, while the plan called for 170,000, was the outstanding victor. Its record is the result of the outstanding services by captain-mechanic A. Zaloga, who was awarded the USSR State Prize for 1984.

Labor productivity for the transport fleet as a whole was increased by 4 percent and the prime cost of transportation reduced.

The shipping company intensified control over port operations during the navigation season. The experience of A. Perepelitsa's progressive consolidated comprehensive brigade from the Poyarkovo Port shows that shore enterprises can and should work effectively in any production conditions. Svobodnyy and Khabarovsk port workers were quite effective. In nine months, the company's overall dock time for loading operations was reduced by 4.4 percent, labor productivity improved by 2.8 percent and prime cost was reduced by 4 percent.

Freight work efficiency was also improved through the opening of new freight flows. We started to deliver pipe from Japan for the Okha-Komsomolsk gas pipe line using river-sea type ships. There were experimental long voyage non-transfer runs hauling petroleum products to Magadan and Sovetskaya Gavan from Khabarovsk and Komsomolsk-na-Amur. We organized the railroad-to-water transfer of some of the lumber and imported freight at Svobodnyy Port instead of at Blagoveshchensk; this increased freight turnover.

The haulage structure plan was, on the whole, completed. Unfortunately, just like last year, the towing of log rafts turned out to be a "bottleneck"--160,000 tons were not delivered. The problem is that the USSR Ministry of Timber, Pulp and Paper, and Wood Processing Industry does not have sufficient resources along the shoreline zones of the basin to fulfill targets set for the shipping company by the Ministry of the River Fleet's Economic Planning Administration. For some reason, targets are constantly increased.

There were big difficulties at the USSR Ministry of the Gas Industry's department berths in Moskalvinskiy Port, where shipping company vessels are processed slowly. The berths at the Komsomolsk and Khabarovsk petroleum refineries need reconstruction.

Major construction leaves something to be desired. The Dal'transstroy [Far Eastern Transport Construction] Trust is not using resources for the most important projects: the cargo area of Komsomolsk Port, the Krasnaya Rechka sector in Khabarovsk, and new production capacities at the Malshevskiy repair and operating base. We must admit that we have still not paid sufficient attention to construction using our own resources.

Ship repair is now underway throughout the basin. The innovation of captain-brigade leader A. Yefremov's OT-2123 brigade at the fleet's Blagoveshchensk repair and operating base is being widely applied. Work has begun to prepare loading-unloading equipment and all machinery at ports.

In preparing for the 27th CPSU Congress, our order-winning collective sees its duty as consolidating acquired experience, eliminating mistakes and improving qualitative and quantitative indicators for transportation operations.

11574
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MARITIME AND RIVER FLEETS

CONTAINER SHIP UTILIZATION PLAGUES AZOV SHIPPING COMPANY

Moscow VODNYY TRANSPORT in Russian 3 Jan 85 p 2

[Article by staff correspondent V. Zhivotkov in the column "The Shore and Ship: Problems of Servicing": "How to Help the Second Mate?"]

[Text] The Asitko Line (Zhdanov--ports of west Italy), the first container line in the Azov Maritime Shipping Company, was established more than 10 years ago. Used on it at first were multipurpose ships such as the "Rossiya" (138 container capacity), "Nikolay Zhukov" (219) and "Vasiliy Shukshin" (165). The Azov Shipping Company then received the "pure" containership "Mikhail Svetlov" (of the "Aleksandr Fadeyev" type) for 310 containers.

Crews of the vessels persistently sought reserves for raising efficiency of these types of shipments. Many completely justly believed that tremendous possibilities are hidden in skillful planning of vessel loading on the line. There were also record holders in this work.

One after another (in August and December 1983 and in April 1984), the Azov Shipping Company received three containerships of the "Simon Bolivar" type for its disposal. Each has a 500-unit capacity. Already the first months of their operation have posed some serious problems for Azov workers.

The first and the most important and difficult one--the problem of qualitative drafting of cargo plans and calculating the stability of vessels.

The task of optimizing utilization of container capacity of the three new motorships-container carriers "General Gorbatov," "Rostov-na-Donu" and "Yuriy Levitan" has become greatly complicated. This is not difficult to understand if one looks at how many parameters of optimization the captain's second mate has to take into account in drafting cargo plans: 500 containers, 8 ports of a ship's rotation on the line, 2 cargo-handling operations (unloading-loading) in every port, 4 tiers of containers each in 6 holds and 3 tiers on deck, 4 holds are equipped for accommodating 40-foot containers, heavy and light cargo, compatible and not compatible and the deck is equipped for accomodating 64 refrigerator containers. And all of this must be "squeezed" without fail into the constraints of the requirement to ensure stability of a vessel!

With such a great number of parameters of optimization for seeking a needed solution for cargo distribution on a vessel, one has to sort out hundreds of

versions in one's mind. This is beyond the strength of a human mind. In drafting a cargo plan, the captain's second mate and the captain can make a correct solution on the basis of personal experience only by using a minimum of versions. They will have neither strength nor time for the maximum of versions. Can there be an optimum solution when a minimum of versions is examined?

The calculation of ship's stability in drafting one version of a cargo plan requires at least 2 hours.

What is to be done? All interested persons with whom I had a chance to talk on ships and in the shipping company administration stated with one voice that to facilitate work of the captain's second mate and to obtain a genuinely optimum version of a cargo plan, it is necessary to have microcomputers on large containerships. Incidentally, this is already in practice in other maritime basins.

The Azov Shipping Company has purchased two microcomputers abroad, which should make calculations of a vessel's stability, draft and strength and draft cargo plans. But the matter has dragged out with respect to introducing them in ship practice.

Seamen have also many complaints about the utilization of data processing equipment. A lot of time and nonproductive manual labor is spent in preparing and processing all kinds of documents. It is extremely necessary to have a special device on large containerships for reproducing copies of bills of lading, manifests and ship's rolls.

The captain's second mate has to use many tens of "bay" forms in drafting cargo plans and to record by hand in every graphic "bay" compartment the number of a container, its index and destination of the cargo. And this has to be done when there are 500 containers aboard the vessel! Surprisingly, the "bay" forms are not disseminated in a centralized manner in the shipping company, and the ship's administration has to use the services of agents abroad, for an appropriate payment, naturally.

Ships do not have enough writing and carbon paper and typewriter ribbons...

The regular routes on which the containerships "General Gorbatov," "Rostov-na-Donu" and "Yuriy Levitan" operate have six--eight ports of call. The layovers are quite brief: 4-5 hours. The passages between ports also take little time. The navigators are very overloaded: they spend at least 12 hours on the watch and fulfilling other duties, the second mate does even more.

On one of the containerships with the help of the captain's second mate I was able to time-study his work on a regular voyage. In my working note pad there are the following sentences from the comments by the second mate: "did not have a good sleep after the night watch...," "did not rest again after the night watch...," "did not rest before the night watch...," and "lay down to rest for the first time before the night watch..."

The administration of the shipping company is aware how a second mate working on a large containership is overloaded and tired, but so far has failed to adopt specific measures aimed at lightening his work. There is even no unified opinion

as to how the tension in his work must be relieved. Some believe that it is necessary to add to the ship's staff a second position of the captain's second mate and assign only cargo matters to him. Others propose to relieve the second mate of standing watch and assign it to another navigator. Still others say that it is sufficient to improve work organization of the second mate and require other navigators to strictly fulfill watch duties with respect to control over progress of cargo handling operations as provided for ship service regulations of the MMF [Ministry of the Maritime Fleet] of the USSR.

Unfortunately, the Azov Shipping Company Administration and the baskomflot [basin committee of the maritime and river fleet workers trade union] did not have the good sense to assemble seamen, captains of industry and trade union workers and thoroughly discuss the proposals on lightening work of second mates, decide in the final analysis on one best version and then begin to act.

There are also other problems which complicate the activity of the second mate, and other crew members as well, and do not make it possible for them to rest in a normal manner during a voyage and on shore.

Here is what Aleksandr Mikhaylovich Zagrebin, captain of the motorship "Rostov-na-Donu," said about the disorders at the base port, which interfere with normal work and rest of the crew:

"The absence of a container terminal in Zhdanov makes it impossible to process ships precisely and in a rapid manner and thereby to "scrape up" time for the crew's rest (the ship leaves Zhdanov according to schedule). The seamen have many complaints about the work of the transport fleet. The low qualification of tackle handlers adds to the worries of the crew. Frequent sorting of containers exasperates us in particular. Port workers are even unable to conduct bunkering rapidly and in an organized manner, crew members have to be kept aboard for hours while waiting for the arrival of the fueler. We do not have substantial aid from the Zhdanov Fleet Technical Service Base. There is a need for highly reliable forecasting of containership loading on the line..."

I would like to add to these words by the captain the complaints of second mates against workers of the Zhdanov office of the Soyuzvneshtrans [not further identified], who seldom visit the ships and frequently make changes in ship loading plans. It is difficult to draft a cargo plan in a prompt and qualitative manner under such conditions.

And in the final analysis everyone must bear in mind that currently the price of an error by the captain's second mate in drafting a cargo plan is much higher!

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MARITIME AND RIVER FLEETS

COMPUTER SYSTEM DETERMINES OPTIMAL SPEEDS FOR MARITIME FLEET

Moscow VODNYY TRANSPORT in Russian 12 Jan 85 p 1

[Report on interview with Lev Andreyevich Lepetov, participant in the development and introduction of the automated system for determining optimal speeds of chartered ships (ASOOSKh), by correspondent L. Yushkevich: "We Are Economizing Millions"; date and place not specified]

[Text] The approach to the development of automated maritime transport control processes is qualitatively new in the 11th Five-Year Plan. The basic efforts are directed at developing multilevel systems of forecasting, planning, regulation, calculation, control, analysis of cargo movement, operations of the fleet, ports and ship repair plants and the condition of material and technical supply, comprehensive servicing of ships, the charter market and the socioeconomic development of the sector as a whole.

The ASOOSKh [automated system for determining optimal speeds of chartered ships] has been functioning successesfully under production conditions since June of last year on the basis of developments which were carried out by the Soyuzmorniiproyekt [State Planning, Design and Scientific Research Institute of Maritime Transportation of the USSR Ministry of the Maritime Fleet] and specialists of the V/O Sovfrakht [All-Union Association for Chartering Foreign Tonnage of the USSR Ministry of the Maritime Fleet]. Our correspondent L. Yushkevich has interviewed L. Lepetov, participant in the development and introduction of this optimized control task.

[Question] Lev Andreyevich, will you please describe the purpose of the ASOOSKh and what place it occupies in the sectorial ASU [automated control system] of the maritime fleet?

[Answer] The V/O Sovfrakht charters foreign ships for hauling foreign trade cargo. The task consists in carrying out necessary shipments within the assigned periods and with minimum expenditures. Chartering of ships on time-charter conditions is being used sufficiently broadly in modern maritime shipping and in the activity of our association. This kind of chartering pro-

vides for applying along with the lease to the account of a charterer also some operational expenditures of a ship, the principle share in which are expenditures for bunker fuel. The use of the ASOOSKh is precisely directed at lowering cargo transportation costs by reducing overall expenditures for a leased ship.

The ASOOSKh was developed by specialists of the V/O Sovfrakht as a composite part of the sectorial automated maritime transport control system and is in conformance with the requirements of the NGRF [continuous schedule of fleet operations], the NPGRP [continuous plan-schedule of port operations] and the NPGRTU [continuous plan-schedule of transshipping center operations].

[Question] How much time did the specialists spend on designing the ASOOSKh, what system of methods was used in developing the production routine and on which electronic computers it is being realized?

[Answer] The idea of designing a tool for the V/O Sovfrakht, which would make it possible to economize bunker fuel in operation of leased ships, dates to the period of the sharp rise in prices for bunker fuel in connection with the fuel and energy crisis which broke out in the world. In 1982, the V/O Sovfrakht and the Soyuzmorniiproyekt, particularly A. Gerasimov and A. Rakhovetskiy, have developed within the framework of the subsystem Frakht [Charter] ASU-Maritime Fleet a special system of methods for determining speeds of chartered ships. The system of methods was approved and confirmed by the MMF [Ministry of the Maritime Fleet] for introduction. However, utilization of the system of methods has presented certain problems for practical workers, since calculations were done manually. Therefore, together with associates of an ad hoc department of the V/O Sovfrakht work was begun later on in developing an automated system. This work was completed by the 60th anniversary of our sector.

The theoretical base of the system of methods was substantially expanded and deepened during designing of the ASOOSKh. The ASOOSKh is a dialogue system being realized on a small-scale electronic computer with the use of progressive information processing technology.

The dialogue operation makes it possible to use the system broadly for multivariant calculations of trip elements during chartering and operation of leased ships.

[Question] What is the main distinction of the automated method in solving the task of selecting an optimal speed and calculating economy from the use of this speed?

[Answer] The system takes into account the world charter market conditions and the level of prices for bunker fuel. It makes it possible to determine not only the optimal speed of a ship on every specific passage, but also to establish the functional dependence of fuel expenditure on the speed of a given ship. This for its part makes it possible during chartering of a vessel, on the one hand, to control the data of a shipowner with respect to fuel expenditure and, on the other hand, to select a vessel that is most advantageous for us out of those offered in the charter market. A positive factor of the system is also the possibility of conducting automated calculation of the savings obtained by using optimal speeds.

[Question] In what language is the dialogue conducted with the machine?

[Answer] A natural, non-formalized language is used in the system. For the purpose of conducting a dialogue, a multiterminal system has been developed, which at the present consists of a small-scale electronic computer and six visual displays. In the near future, the number of visual displays will be increased to 20 at which time specialists of all subdivisions of the association will be able to carry on a dialogue directly with the electronic computer from their work places.

[Question] And finally about the figures. What economic effect is there from the use of the ASOOSKh?

[Answer] The ASOOSKh is a typical example for solving an optimized control task. Namely: optimized tasks, as a rule, are the ones making it possible to obtain an extremely noticeable direct economic effect. We do not wish to astonish you with figures, but judge for yourself that in the period since June 1984 we have saved more than R1.3 million by using optimal speeds of leased ships. In this case it is completely clear to us that the possibilities of the system have been used far from completely so far and we are continuing work on its further improvement.

[Question] Are there analogues in the utilization of such systems in the maritime shipping practice?

[Answer] The fuel and energy crisis of the capitalist world and the unfavorable world charter market conditions for shipowners have resulted in a rather broad utilization of reduced speeds in the shipping practice. However, while working on the system, we have not found publications on such an experiment--neither in Soviet nor foreign sources.

[Question] Is there a reserve of universality in the system?

[Answer] Although the ASOOSKh is designed for operational control of ships, which are chartered on the time-charter conditions, it can be completely transformed into a system which makes it possible to control operation of ships of the Soviet merchant fleet.

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MARITIME AND RIVER FLEETS

RECONSTRUCTION, MODERNIZATION AT ASTRAKHAN SHIPYARD

Moscow VODNYY TRANSPORT in Russian 18 Dec 84 p 2

[Article by S. Aptekar', director of the Volgotanker Shipping Company's Shipbuilding and Ship Repair Yard imeni 3rd International: "Yet Another Height"]

> [Text] The essence of what is now taking place at Volgotanker's Shipbuilding and Ship Repair Yard imeni 3rd International in Astrakhan is directly related to the S&T revolution, being its specific and tangible embodiment. One of the sector's largest enterprises, the collective of which was awarded the Challenge Red Banner of the RSFSR Council of Ministers and the AUCCTU for its results in 1983, is being decisively rebuilt and technically modernized. S. Aptekar', the yard's director, reflects on this.

I was appointed the yard's chief engineer in the fall of 1962. I came, as they say, from the outside and was just getting acquainted with the enterprise and its personnel. The yard was visited by managers from the oblast, and the city and production commanders were invited into the director's office for a thorough discussion. The theme of the discussion was not one of the most pleasant--the enterprise, which had a solid working condition and a good reputation for its progressiveness, had weakened markedly in recent years. Everyone, including me, the newcomer, was given the question: "How would you evaluate the situation which has arisen?"

As I recall, an enterprise-wide party meeting which passed in strident discussion gave an extremely precise evaluation of the situation. Communists said frankly that plant workers were not pleased with manual labor wage rates and the lack of precise, specific tasks and long-term, inspiring prospects, if you will.

The collective, one could say, had recognized that the time was ripe for change. For a number of reasons, the enterprise did not even have a stable, constant work load. The ministry and the shipping company met the enterprise management's proposals halfway--the plant was first entrusted with the construction of an entire series of large dry cargo sectional barges. Their construction became more than simply a matter of prestige to us. It was as if the plant had been put at the start of everything new and progressive which was then beginning in the river fleet. This was the initial position. It served as a powerful impulse for the development of the enterprise itself, which as a consequence experienced, one

could say without exaggeration, its second birth. Electric arc welding was thoroughly mechanized and a modern ship construction technology created. The slip's capacity was doubled and it became the largest in the sector.

Without going into detail, one could note that even today the development of new production is the main stimulus to technical modernization and all reconstruction. It is no secret that its implementation in an operating enterprise, when one has to rely mainly on one's own potentials, requires considerable diversion of the entire collective's effort from the solution of day-to-day problems. And, after all, they still hold you responsible for the plan.

However, we cannot ignore one for the other. One cannot live long with old technical "baggage." The fundamentally new is difficult and sometimes can simply not be consolidated on an obsolete technical basis.

Without appropriate strengthening, the plant could not move to the construction of ships with heavier hull plating and to work with thicker metal plates.

In order to do this, we increased crane capacity at the slip 20-fold! Now at the slips where, as it is known, manual labor used to predominate, we have moved from the assembly of small, five-ton barge sections to the construction of sections and units weighing from 24 to 56 tons.

This became possible only after substantial changes in the hull welding shop. Two flow lines for working sheet steel were set up, one for hot cutting of metal. There are areas for cutting sheets mechanically and assembling sections and units.

The results obtained have not been bad. Since the beginning of the 1960's, output per worker has grown 2.4-fold. Almost twice as much metal is worked annually, and total capacity for ship construction has increased 2.6-fold.

The reconstruction of an enterprise and the modernization and upgrading of production capacity is a long-term and complicated process. There were errors and deviations in our technical policy. Views changed from year to year. In spite of our wishes and previous plans, we didn't succeed in completing everything we started. More than that, reconstruction was delayed at the most decisive, final stage.

The yard's collective is counting on help from the shipping company and ministry in accelerating and delayed construction of the shop for large units or modules. This shop is of fundamental importance to us as the crown, figuratively speaking, to the entire reconstruction, completing the creation of complete flow line technology for shipbuilding and the final mechanization of all processes from laying steel to assembling, "under one roof," modules for future large sections. This will reduce labor intensity at slips by 3- to 4-fold. This is directly linked to the possibility of increasing the shipbuilding program at the yard 1.5-fold.

Benefits from reconstruction are expressed not only in figures. They are estimated not only from a utilitarian, practical perspective. What lies below the surface is much more important. It is not only the plant and its equipment which is being rebuilt and modernized. Reconstruction is also thoroughly cultivated

ground for the life of a new collective, creating the soil for sprouting initiative and creativity. It also involves habits and the atmosphere which has developed over the years.

The starting point is not arbitrary ideas and instructions from above, but ideas originating in shops and departments. We do not shoot from the hip. The most complete democracy in discussing problems is when workers, technologists, foremen and leading specialists are on equal footings in expressing their opinions. This reinforces the ranks of those whom I would call "brainy" participants in reconstruction. There have repeatedly been informal creative groups of workers to solve the most difficult problems. In other words, there is a qualitatively higher sense and content to the labor of worker-innovators and engineers. Contemporary, ever more complicated production operations have a clearly expressed collective basis and nature. However, the opposite should also be kept in mind: the importance of the so-called "personal factor" is increasing. You could say that the individual, and his creative potential, is even better and more completely manifested and affirmed through professional skill, creative thought, a unified goal and capable collective. Unfortunately, the space in this newspaper does not permit me to name all the active participants in reconstruction.

The yard's workers also expressed sympathy and thanks to our noted scientists, cooperation with whom has arisen and strengthened in the course of reconstruction. Specialists from the famous Ye. O. Paton Institute of Electric Arc Welding of the Ukrainian SSR Academy of Sciences tested many welding innovations at the yard, some of which have been introduced here. Science has truly become a powerful production force. Our cooperation with Lengiprorechtrans, departments from the Leningrad Institute for Water Transport, the Gorkiy Institute for Water Transport Engineers and the Astrakhan Central Design Bureau of the RSFSR Ministry of the River Fleet has been just as fruitful.

Our yard was one of the country's first to be entrusted with the building of the next generation of non-motorized vessels with stronger hull elements, intended for continuous operation for several decades. These are petroleum barges and sectional dry cargo barges.

This required a fundamental reexamination of the entire process, from initial preparations to launching. You can judge the difficulty and laboriousness of introducing the new series from the fact that instead of using 5-8-mm sheets, we moved to metal 8-16 mm thick. Beginning with reconstruction, this transition was made with practically the same number of workers.

This is the truest mark of production intensification.

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MARITIME AND RIVER FLEETS

NEW ANCHORING SYSTEM FOR RIVER BARGES PROPOSED

Moscow VODNYY TRANSPORT in Russian 19 Jan 85 p 2

[Article by V. Kamenev, department chief of the Novosibirsk Affiliate of the TsTKB MRF (Central Technical and Design Bureau of the Ministry of the River Fleet), in the column "Returning to That Which Was Published": "'Brakes' for Ships"]

> [Text] It is generally known that a transport ship without anchor gear resembles a motor vehicle without brakes. During the centuries-old path of development of shipbuilding and navigation, anchor "brakes" have been developed to perfection. But still... A few years ago, the management of the Irtysh River Shipping Company adopted a decision to remove anchors and anchor raising mechanisms from barges. Anchor-bearing pontoons were proposed as replacement. Experience has proven the fallaciousness and haste of the adopted decision. Our newspaper published critical material against this "innovation' three times (the last time on 15 March 1984, the article "Captains Do Not Go Mushroom-Picking").
>
> We now offer the readers an item by V. Kamenev, department chief of the Novosibirsk Affiliate of the Central Technical and Design Bureau of the Ministry of the River Fleet, in which one of the positive solutions of this problem is given.

Weighing the anchor is indeed dificult and protracted work for barges. (To maintain anchors was also costly). Aftter all, these non-self-propelled river vessels do not have power units and crews.

Realizing the situation, designers of the Novosibirsk Affiliate of the Central Technical and Design Bureau of the Minrechflot [Ministry of the River Fleet] have conducted an intensified search in designing new means for vessel anchoring. Under the supervision of V. Zhukov, winner of the USSR state prize and chief designer, they have found it: it is called the pile anchor gear.

This invention is based on a fundamentally new design. An anchor and a wing, it may seem, are completely incompatible things, but it is precisely their union

that has made it possible to exclude power supply to the vessel and to automate the process of lowering and lifting the anchor and thereby to reduce the vessel anchor weighing time during layover to zero. The "brake" works in the following manner. During the vessel's forward motion, the pile anchor under the action of the counterweight mass and the lifting power of the wing, which occurs during motion, fits closely to the outer shell of the vessel hull and is fixed in this position. During stopping of the vessel, it goes down by itself and works like a large anchor blade. But unlike it, its holding power does not depend on the mass, but is determined only by strength characteristics and exceeds the holding power of anchors 6-10 fold.

The innovation has successfully passed operational tests during 3 navigation seasons on four 600-t barges in the Vyatka River Shipping Company and on one 1,650-t barge at the Novosibirsk river port.

In addition to operational advantages (including elimination of manual labor), introduction of the pile anchor gear will make it possible to reduce metal volume of non-self-propelled vessels by 1.5 to 3.5 tons, the cost of construction by R2,000-5,000 and reduce a shipping company's requirements in anchors, anchor chains and anchor hoisting mechanisms.

Thus, the new gear is so far the best and only alternative to traditional anchor gear as well as to operation of the non-self-propelled fleet without anchors. This is why the question on series introduction of pile anchor gear on the non-self-propelled vessels which are being built and which will have to operate for 25-30 subsequent years must be solved urgently.

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MARITIME AND RIVER FLEETS

'VOKHILAYD' FERRY FOR YEAR-ROUND SERVICE IN ESTONIA

Moscow MORSKOY FLOT in Russian No 12, Dec 84 pp 41-43

[Article by V. Ozimov and I. Marchenko of the Leningrad Central Planning and Design Bureau: "The Motor Vehicle and Passenger Ferry 'Vokhilayd'"]

[Text] A place of no small importance is assigned to ferries in providing coastal transport of cargoes and passengers in all basins of the USSR. This has to do with eliminating double transfer of goods during their delivery from supplier to consumer. In this way, delivery time is substantially saved, the safety of goods is improved and the amount of heavy manual labor in loading and unloading operations is reduced. For some regions of the country, ferry crossings are the basic form of transport connection between mainland and islands, and this is characteristic, above all, of the Estonian SSR.

Until the present time, regular ferry communication was effected only in the southern part of Estonia by "Tekhumardi" and "Kerchenskiy" class ferries, the operation of which was impossible in the northern part because of small depths of the water area. Until 1984, communication in the northern crossings was effected by "Syprus" class ferries, with the calling in of a Tekhumardi ferry for passages in ice.

Syprus class ferries provided crossing work in an ice field no thicker than 0.2 meter, whereas the ice situation in the crossings is, as a rule, considerably more difficult, and ice thickness reaches 0.4 meter. With formation of solid ice cover up to 0.4 meter thick on a route, the work of Syprus class ferries was practically ruled out, and movement of motor vehicle transport of limited carrying capacity was effected directly over the ice.

Prolonged operation of Syprus class ferries in northern crossing conditions led to considerable wear and tear on hulls and their frequent damaging, and these ferries are subject to being written off. Especially timely, in this regard, is the placing in operation of a new, limited-draft motor vehicle and passenger ferry, construction of which was carried out at the Riga SRZ [ship repair plant] according to a Leningrad TsPKB [Central Planning and Design Bureau] design. The lead vessel of the series, named "Vokhilayd" in honor of one of Estonia's islands, is intended to provide year-round cargo transport on all active crossings.

The vessel is constructed for USSR Registry class KM * UL [1] III (ferry) [The asterisk is a circled five-pointed star in source material], with additional reinforcements for work in ice 0.4 meter thick, and it constitutes a single-deck, twin-screw ferry with diesel-electric power plant and steering assembly.

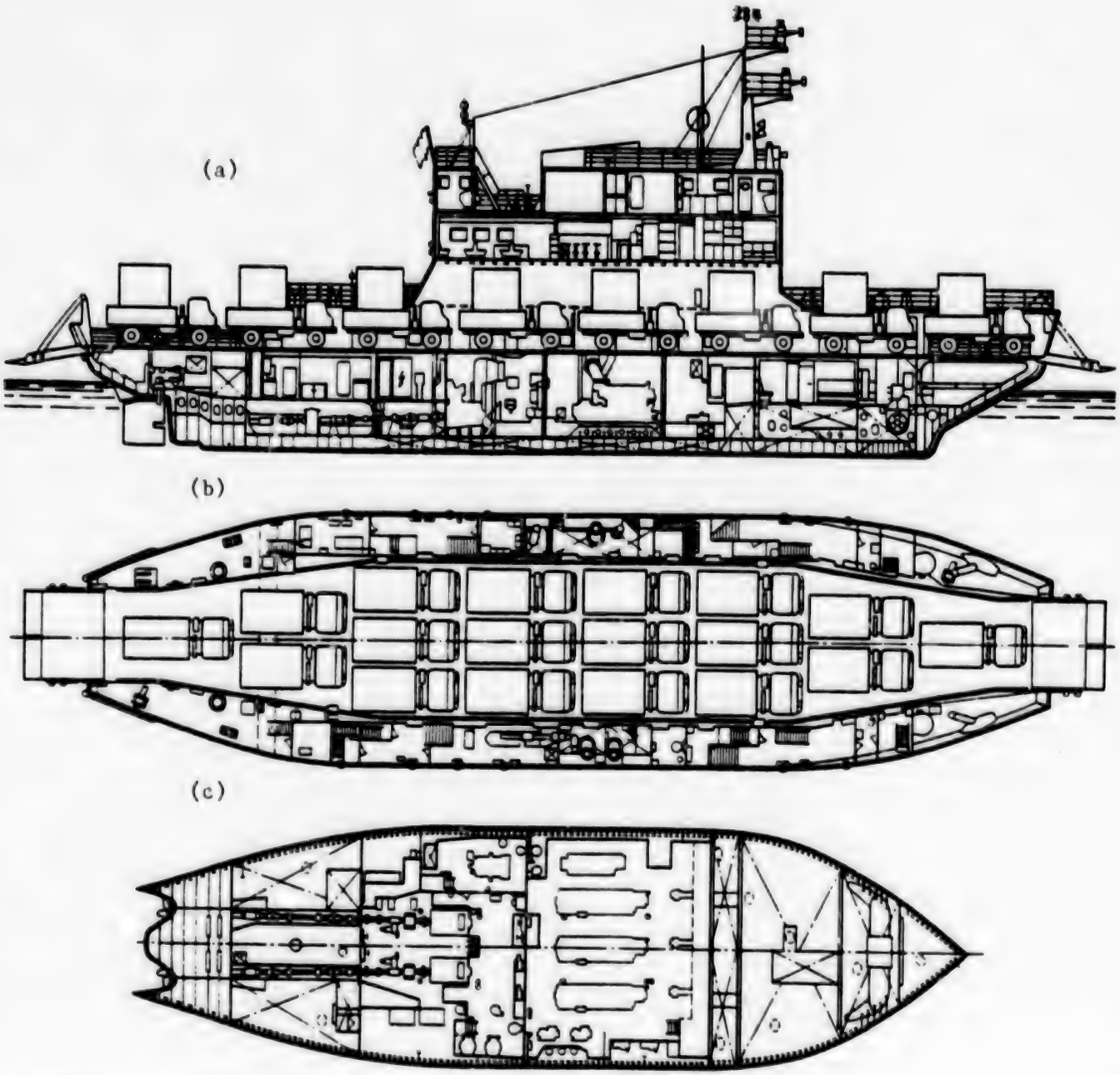
BASIC CHARACTERISTICS OF THE FERRY

LENGTH:	
Greatest	49.9 m
At loaded waterline	44.9 m
WIDTH:	
Greatest	12.8 m
At loaded waterline	12.2 m
HEIGHT:	
Side	4.8 m
Driveway part	4.2 m
DRAFT AT LOAD LINE	3.1 m
PASSENGER CAPACITY	120 persons
MOTOR VEHICLE CAPACITY	18 units (GAZ-66) or 10 units (KamAZ-5320)
POWER PLANT CAPACITY	3 X 661.9 kw (900 hp)
SPEED	12.5 k

Motor vehicle loading and unloading are done over a bow or stern ramp by the through-traffic principle. Passenger embarking and disembarking are accomplished separately, via side accommodation ladders and gangways [brows] or through the access ports [gates] at a specialized L-shaped [Russian G--equivalent to inverted English L--in source material] wharf, which improves the ferry's operating safety and reduces the loading and unloading time of motor vehicles and passengers.

Dimensions and lines of the vessel's hull were selected with an eye to providing high penetrability through ice, good sea-keeping and maneuvering characteristics with limited draft, efficient placement of ferried motor vehicles on deck and comfortable conditions for the stay on board of passengers and crew. By architectural design type, the vessel is related to turret-type ferries, with a through driveway for motor vehicles and the placement of superstructure housings along the sides. Motor vehicles are arranged on the deck in three

rows. The passenger salon has a good panoramic outlook, and is placed above the driveway part.



GENERAL LAYOUT OF THE VESSEL
a. Side view b. Upper deck
c. hold

There is a bar next to the salon for the convenience of passengers. To increase specific transport capacity, the ferry's driveway part has the maximum possible opening, and only auxiliary accommodations are placed in the side superstructure housings.

The ferry is manned by the brigade method, with the crew living ashore. There are 2 private cabins and 10 berthing spaces in 2- and 3-person cabins for the crew's operational needs. A galley and dining room [mess] are fitted out for feeding crew members. There also is a set of the necessary convenience and hygiene and sanitation accommodations.

The construction and shape of the pilothouse and after control station provide a good outlook over the bow and stern ramps, which is essential when conducting mooring and cargo operations. The sea-keeping qualities of the vessel were decided by taking into account its purpose and operating conditions, the latter including those in ice and shallow water. Installed in the vessel is a propellor and rudder arrangement with open, fixed-pitch screw propellors having a blade contour which aids reduction of impact loads arising in the screw-shaft-engine system when working in ice and cluttered water areas. To ensure good maneuvering characteristics, a PU 130A steering assembly, consisting of a variable-pitch screw propellor 1 meter in diameter in a tube, which works off an electric motor of 135 kw capacity, is installed in the forward part of the ferry.

The ferry's stability satisfies requirements of the USSR Registry Regulations for passenger vessels of limited navigation region I, and water-tightness is ensured upon the flooding of any one compartment. The vessel's all-welded hull has reinforcements for ice-type category UL of the USSR Registry, and is put together, in the transverse [athwartships] system, with 600 mm frame spacing. The stem is of the icebreaker type, and the hull shape is ice-type, with the screw propellors in half tunnels and the steering assembly protected by an ice-type extension.

Mark 09G2 steel is used as hull material, and the superstructure and deckhouses are made of VStZsp2 steel. The solidity of the [main] deck permits ferrying large-load motor vehicles of the KamAZ [Kama Motor Vehicle Works] type. The hull is protected from corrosion.

For the ferry's movement in an unbroken ice field, the power plant must develop full capacity in the whole range of screw propellor work regime change--from sailing in open water to the mooring regime in ice--and it must develop increased torque when a screw is retarded in ice, provide for frequent and rapid reversals [backings] and withstand the constantly occurring impacts of propellor against ice with an occasional seizure. All of these requirements are satisfied by the diesel-electric power plant, which consists of three main diesel generators with 6V D26/20 - AL - 2 engines and SSEE 569 - 6V alternating current generators having a capacity of 750 kv• A(390 v, 50 Hz) at a rotation rate of 1,000 rpm, from which is effected the powering of two direct current main propulsion electric motors of type MP2 - 14 - 630 - 152 - 8MZ, each having

a capacity of 710 kw (440 v) at rotation rates of 370 and 500 rpm, and all shipboard users.

An AC/DC system, using reversible thyristor converters in the main circuit, was adopted for the main power plant. Each main propulsion electric motor receives power from a thyristor converter connected to busses of the main distribution panel through a doubled reactor. Regulating a main propulsion electric motor's revolution rate is accomplished by smooth change of voltage at the thyristor converter output, and by reversal of polarity, for tne direct current of the field. The thyristor converters are composed of ATR 1600/460-2R [Russian R may be English P] unified functional thyristor unit blocks [modules] with nominal 1600 a current and 460 v voltage, and are placed in the main distribution panel. Modes of operating two and three diesel generators with the two main propulsion electric motors are provided in the power plant design. Shifting from one mode to the other can be done without interrupting main propulsion electric motor operation.

The main power plant has remote control from stations located in the pilothouse and the after [control] station, and also has local control from a station in the TsPU [central control post]. All the necessary forms of protection and interlocking, as well as the signalling and control parameters, required by USSR Registry Regulations are provided by the main power plant design. Auxiliary electricity users also receive power from busses of the main distribution panel through the doubled reactor.

The use of a common electric power system gives advantages over separate electric power plants to meet individual needs: It reduces the mass [weight] and dimensions of electrical equipment, which is essential for a ferry with limited draft; it solves, relatively simply, the problem of powering the basic shipboard users, including the steering assembly; it uses the rated capacity of the power plant the most fully; it reduces the number of generators, with ancillary equipment, installed in the vessel, and thereby reduces the workload in servicing them.

An electric power supply for auxiliary users is provided by a 25 kw capacity 4DM-13M emergency diesel generator in case of primary diesel generator breakdown.

Considering the significant noisiness of diesel generators, the principle of "noisy" and "quiet" compartments was used in arranging the general disposition of mechanisms. Mechanisms and equipment not requiring constant watching and servicing are placed in the noisy compartment of the main diesel generators. To diminish the noise in this compartment and prevent the transmission of structural noise throughout the vessel, the main diesel generators are installed on shock absorbers. The boiler installation, auxiliary mechanisms and the TsPU space, with the electric propulsion, control and signalling panels, thyristor converter sections and doubled reactors placed in it, are located in the quiet compartment of the main propulsion electric motors.

Shipboard steam supply needs are met by a KVA 0.63/5 automated water-tube boiler unit operating on liquid fuel.

To increase the ferry's operational reliability in ice with its limited draft, design of the ice-type and kingston valve [seacock] wells and salt water cooling system was executed with due regard for the operating experience of ice-type vessels of both foreign and domestic construction. The ferry has kingston valve and ice-type [seacock] wells of sufficiently large capacity, and the ice-type wel' is located in the stern part of the vessel in immediate proximity to the propulsion screws to reduce the probability of slush-ice intrusion. In addition, the closed-loop cooling system is installed through a ballast tank. The shipboard layouts were selected with concern for the operating features of a ferry on Estonian crossings and minimal time expenditures on mooring and cargo operations.

The ramp layout provides for motor vehicles' entering and leaving the ferry's deck without a turn from deck to wharf, and makes allowances for the possible variations in water level and changes in the ferry's draft. The ramps have high flanges which prevent sideways slipping of motor vehicle wheels. Electric winches, controlled from the pilothouse, the after control station and stations near the winches, are used to drive the ramps.

As lifesaving means, 14 PSN-10M liferafts, each with 10-person capacity, are installed unattached on the navigation bridge and on the first superstructure level deck [01 level]. To bring the liferafts together in the water, and as an active lifesaving means, there are two RShP-3.5 boats with outboard motors on each side of the ferry. Launching the boats into the water is done by means of rotating overhead-beam cranes.

The ferry's communication with the shore and other vessels is effected by a complex of modern radio equipment. The navigational equipment installed in the vessel provides for the ferry's safe operation in conditions of limited [water] depths and poor visibility, and in a difficult ice situation.

Experience in operating the lead ferry, "Vokhilayd", during 1984 winter navigation has confirmed the ferry's high capacity for work. With its placing in operation, inhabitants of the Estonian islands acquired a regular, year-round transport connection with the mainland.

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FISHING FLEET DEVELOPMENT

INADEQUATE FISHING FLEET MAINTENANCE, REPAIR CITED

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 11 Dec 84 p 2

[Article by Ye. Ponarina: "Having Closed Their Eyes to the Problem"]

[Text] The editors often receive letters with postmarks from port cities. They express vexation, bewilderment, and anguish as to why ships of the Ministry of the Fish Industry sit idle for years awaiting repairs. Why does it happen that, after breaking all deadlines for returning a floating base to a fleet, a plant contrives to report ahead-of-time fulfillment of work? Why doesn't Remrybflot [Fleet Repairs Industrial Association] strive to repair old equipment, rather than prefer to replace it with new?

This was discussed in the article, "The Flotillas Sit Idle" by V. Dneprovskiy, the chief engineer of the Zapryba [Fishing Industry of the Western Basin Main Administration] VRPO [All-Union Fish Production Association], published in SOTSIALISTICHESKAYA INDUSTRIA on 25 April 1984. The article brought many letters from our readers. They support the author, feeling that the time has come to change the procedure for organizing Remrybflot work: eliminate from production activity indicators the cost of equipment, materials and machinery which are installed or utilized during ship repair. The main point is to create a unified engineering administration capable of being responsible for the operation and support of repair.

However, judging from the answer by Deputy Minister Yu. Bystrov, the ministry does not consider the situation alarming. Yes, the sector staff does acknowledge that the cases of ships sitting idle awaiting repairs for periods exceeding the planned time are true. However, this question is under the ministry's constant supervision: "as a result, compared to 1980, in 1983 there was a considerable reduction of repair time for the fleet. For floating bases, this was 3.1 percent, for transport refrigerators, 2.7 percent."

He then gives reasons for the long repair time for ships: the lack of spare parts, their delayed delivery to ship owners.... the ministry is "taking measures to increase ship repair capacity and improve its use factor. Average annual ship repair capacity has grown by 2.2 percent..."

There is enviable optimism in this answer. Unfortunately, it is not shared by authors of letters to the editor. Here is what V. Kolesnikov, department

chief at the Kholmsk base of the production transport fleet writes: "The idle time of ships undergoing repairs or waiting for them at the Sakhalinrybprom Production Association was 42 percent in 1983. This indicator has a tendency to grow. The Yulian Markhlevskiy floating base, with an annual production program of 35 million rubles of commercial output, was sent for repairs in February 1983. The target date for its coming out of repairs is 1985. In 1960, the Novaya Ladoga, a ship of the same type, underwent an equal amount of repair in one year and a month. It cost only 3.2 million rubles. Now the repair price has been pushed to 5.5 million rubles.

This is supported by A. Lukin, chief of the association's mechanical-ship service: "The yard's gross output includes the value of the electronic navigational instruments and even the main engines. This amounts to 20-30 percent of total work cost."

It would seem that it would be simpler and quicker to replace old equipment with new than to put the old equipment back in order. But it only seems this way. G. Kudryashev, senior mechanic on the freezer trawler Peypsi, writes: "In fact, there is no more complicated work than replacing the main engine on a large freezer trawler. They take almost six weeks to do this, although it is clear to even a ship repairman with minimal skills that this is a matter for a week. However, the main engine costs more than 225,000 rubles. This permits the yard, according to existing norms, to 'stretch out' work on paper to 42 days. This creates the appearance that all is well with capacity growth."

They cannot help but know this at the ministry. However, judging by their answer to the editor, there is nothing to correct -- they do not even want to analyze the situation. How else can one evaluate the announcement: "Work of ship repair enterprises in the fishing industry is evaluated for a number of indicators determined by USSR Gosplan, including for gross output."?

Having decided that Gosplan is opposed to the reexamination of indicators, I turned to Ye. Odinets, deputy chief of the fishing industry department.

"Nothing of the sort", he said, "We have often recommended this to the Ministry of the Fish Industry. In 1982, after the examination of results from an experiment in using normative net product in the sector, specialists from the ministry's Economic Planning Administration came to the conclusion that such changes were advisable in the system for evaluating the activities of Remrybflot and Soyuzsetesnast' [All-Union Production Association for Fishing Equipment].

It had also been planned, by January 1984, upon agreement with NIIPiN [Scientific Research Institute for Planning and Norms] at USSR Gosplan, to develop a draft plan for new methodological documents in this area. However, the matter did not move any further.

"Why?" I asked Deputy Minister Yu. Bystrov. "If you do not support the proposals in the article 'The Flotillas Sit Idle', then you probably have convincing arguments. Don't hide them from the readers."

Yuriy Nikolayevich assured me: "We are not opposed to changing indicators in the system for evaluating Remrybflot's work. However, this requires careful preparation of methodological documents. We have to be convinced that changes will be for the best and that we will implement them."

Not having heard specific deadlines for completing the development of methodology, I phoned L. Ukraintsev, deputy chief of the Economic Planning Administration at the USSR Ministry of the Fish Industry. At one time it was he who had signed a document acknowledging the advisability of restructuring all-union production associations not involved in fish catching.

"So far, nothing has been done. There was a verbal agreement with NIIPiN at Gosplan that its workers would study similar such reporting in other sectors. This could be normed net product and the normed value of processing. No deadlines were given for completing this work. Why are we not forcing the issue? Remrybflot is protesting against the change. It asserts that it would only complicate reports. It would be necessary to have double accounts, which require additional staff."

So that's it. If one wants to tell things the way they are, then you can definitely say that the management of the Ministry of the Fish Industry is doing practically nothing to restructure the work of repair yards. All references to the shortage of spare parts, the difficulty of compiling methodology and to other problems are excuses. It is refusal through delay. On what scales can one balance complicated reports against the idle time of a modern trawler for just an additional day, while awaiting repairs? During this day it catches 36 tons of fish for the country.

The stubbornness of the sector's staff in keeping the old reports is so surprising because there are a number of vivid examples of another approach to the matter--the experience of the Ministry of the Maritime Fleet. For more than a decade now, its gross output does not include cost of purchased equipment. Ships are repaired much faster and better. The system itself is oriented towards a responsible attitude towards national wealth.

Fishermen write: "Isn't it really clear that idle time involves not only ships, but also people? A professional fisherman has his rhythm of life, and the most unpleasant thing is a time of uncertainty. No one knows when repairs will end."

Really, isn't it clear that the problem of ship repair is a big one and that it concerns practically everyone in the sector? And if it is clear, then it is worth being concerned about procrastination in its solution.

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FISHING FLEET DEVELOPMENT

BRIEFS

GDANSK TRAWLERS FOR USSR--Workers at the V. I. Lenin Shipyard in Gdansk are completing the latest Soviet order for a series of V-408 fish processing trawlers. Twenty-six ships of this type, with displacements of 1,800 tons each, have already been sent to our country. Another three will be launched at the end of this year and the beginning of next year. The USSR is the largest purchaser of the Gdansk shipbuilders' products. This yard has already built 550 ships which fly the Soviet flag. [By SEL'SKAYA ZHIZN' correspondent S. Pomerantsev] [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 2 Dec 84 p 3] 11574

TRAWLER FROM GDR--The keel for an Atlantik-488-type trawler was laid at the national shipyard in Stralsund (Rostock District, GDR). For the next few years the yard will be building this type of ship. The new trawler is a floating fish processing plant, capable of processing daily up to 60,000 tons of fish and canning 26,000 cans. Thanks to the extensive introduction of electronics, the ship engines will be highly automated. The Atlantik-488 is 120 meters long, the longest ship built to date at Stralsund. USSR Minister of the Fish Industry V. M. Kamentsev participated in the ceremony. [Text] [Moscow VODNYY TRANSPORT in Russian 8 Dec 84 p 1] 11574

STRALSUND-BUILT TRAWLER--Shipbuilders at the Stralsund shipyard turned over their first ship this year to Soviet customers. Nakhodka, in the Soviet Far East, will be the home port for the new freezer trawler-seiner, which will carry the name Oparino. The Oparino is the 1,266th fishing vessel built for the Soviet Union in Stralsund since 1946. At the yard this year it is planned to build 35 refrigerator-trawlers of two types. [Text] [Moscow VODNYY TRANSPORT in Russian 8 Jan 85 p 1] 11574

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PORTS AND TRANSSHIPMENT CENTERS

BALTIC PORTS SEE PROGRESS, PROBLEMS IN RAIL-PORT COOPERATION

Moscow VODNYY TRANSPORT in Russian 31 Jan 85 p 2

[Article by Ye. Protas, brigadier of consolidated docker-machine operators brigade of the Riga Port; F. Kudryavtsev, deputy chief of traffic service of the Baltic Railroad; V. Lushchevskiy, VODNYY TRANSPORT correspondent, and L. Lyubimov, GUDOK correspondent, in the column "Strengthen Cooperation of Fellow Transport Workers": "Relying on Mutual Interests"]

[Text] The collectives of five large ports, which are located along the Baltic Sea coast, cannot, figuratively speaking, make a step without their friends and partners--the railwaymen. Although in detail the everyday life of the Riga, Tallinn, Ventspils, Klaipeda and Kaliningrad Maritime Ports, of course, differs from each other, there are prerequisites of succees which are common for all. It is work according to unified technological processes of cargo transshipment and assurance of close interaction at junctions of related means of transportation.

One conclusion after studying work indicators of transshipping centers in the Baltic area is unquestionable: there was more harmony among fellow transport workers last year. The system of continuous correlated planning began to function more efficiently. Time has shown that this form of management is an effective tool for improving the hauling process.

Thus, railway trains left the berths of the Riga Port in December 1984 with a historical record quantity of bulk cargo--500,000 t. The advantages of unified technology, which was developed jointly by port workers and Riga-Krasta Station workers, were confirmed in practice. Rolling stock is now supplied daily strictly according to schedule, and it is precisely this situation that can be regarded as the most substantial achievement of both collectives in the course of the competition under the motto "For High Quality of Labor at Every Work Place!"

This year's task No 1 is maximum loading of every railcar. A "green light" has been given to heavy trains on the Baltic Railroad. There have been examples of locomotive brigades conducting trains which were 1,000 t heavier than the norm. Naturally, very much help here can be rendered to railwaymen by docker-machine operators. On the initiative of the consolidated complex brigade, which is headed by V. Aksyuchits, competition is underway in the port for releasing every 20th railcar body for additional loading. Last year, this made it possible to save nearly 3,500 railcars.

An automated accounting system of railcars loaded with bulk cargo has been in operation at the Riga transshipping center since 1983. An electronic computer efficiently provides data on the quality of loading, which ensures, on the one hand, rational utilization of the rolling stock and, on the other hand, eliminates the lack of personal responsibility during summing up of competition results. The machine is a strict and incorruptible arbitrator, it appraises the final work results of brigades in precise conformity with their actual labor input.

The establishment of an intersectorial coordination council on the basis of the Baltic Railroad and maritime shipping companies has drawn management of the transportation process directly closer to ports and has resulted in a more flexible solution of operational questions of joint operations. The disagreements, which arise in one or another unit of the transshipping conveyer, are eliminated practically without delay, since the continuous correlated schedule is being constantly controlled at all levels. The striving for publicity of the achieved results is also fully explainable: after all, unified start-to-finish dispatcher shifts of stations and ports are struggling for strict observance of schedule and competition has also been organized between the collectives of the Riga, Ventspils, Tallinn, Klaipeda and Kaliningrad transshipping centers.

The unification of efforts of fellow transport workers for better processing of railcars with bulk cargo and introduction of a unified technology can also be traced in such a "long-standing problematic" matter as organization of switching work in cargo regions of ports. The line dividing the interests of respective sides usually appears here; dockers are often offended with railwaymen because loaded railcars are not removed promptly.

There are fewer complaints of this sort since port workers of Riga, Ventspils and Tallinn decided to assume some of these worries and to do switching themselves. Dockers have also begun using the experience of Moscow enterprises more boldly, by acting according to the principle: a railcar, which is found to be out of order in our territory, is repaired by us.

We have already mentioned that the supply of rolling stock for bulk cargo has greatly improved, This, of course, is a direct merit of railwaymen, although we must not disregard those additional loading resources, which we were able to release by using the "small" reserves of economy, which are in the hands of port workers.

At the same time, the unified technology, which has proven itself, cannot be taken as something unchanging and frozen in its current parameters. This concerns especially the modernization of transshipping centers. After all, very often the coastal structures, track facilities and auxiliary installations which are in operation in the Baltic area ports are of considerable age.

The situation is gradually changing for the better. Thus, route all-relay switches interlocking was put into operation at the Ventspils Station during its modernization. Work with respect to reorganizing track facilities and equipping them with means of electrical signaling is being continued at the Kaliningrad-Sortirovochnyy and Riga-Krasta Stations. Development of the Tallinn transshipping center is progressing in the same direction.

However, there are construction projects which are causing serious concern. The most significant among them is the new Riga-Port Station. The situation in the construction of a regional railway pool, which will consequently be included in the new station, is also not dazzling. The rate of work is not high thus far, the beginning of the construction project was a difficult one. The main reason was the delay of necessary documentation, which should have been provided by the Lengiprotrans [Leningrad State Planning and Surveying Institute].

Nevertheless, the central place in the activity of fellow transport workers is occupied by observance of schedule and efficient work on the basis of the NPGRTU [continuous plan-schedule of transshipping center operations]. Which disagreements and hitches hinder the best coordination of combined actions and full use of the unified technology's advantages?

The first which draws the attention of transport workers of Klaipeda, Kaliningrad and Riga is the imperfection in the system of mutual information on the approach of ships and railcars. "Variant readings" of inaccuracies still crop up at times in the operational data which are used in ports and stations. Miscalculations of this sort, even if minor in appearance, immediately affect the most important indicator for all partners: fulfillment of railcar processing norms. Whereas as a whole the activity of transshipping centers last year was appraised positively, then the loading plan was fulfilled by only 95.8 percent. The demurrage of railcars in cargo handling operations has exceeded the norm by 0.23 hours.

The depth and accuracy of mutual information, and especially its promptness, undoubtedly, depend on full utilization of modern means of communication. The Klaipeda Maritime Port together with the information and computer center of the railroad administration has developed and introduced a program for automated transmission of daily information on the approach of bulk cargo directly to its partners--the railwaymen. This program, unfortunately, did not arouse the interest of chiefs of the Kaliningrad, Tallinn, Ventspils and Riga Ports. And here is the result: today, the information, which is so necessary for efficient interaction, is often delayed.

There are also traditional difficulties in interrelations between fellow transport workers. Riga transport workers' routine, in particular, is constantly upset by idling during breaks between shifts of workers of the station as well as of the port. The situation is aggravated by the fact that dockers' shift lasts 8 hours and railwaymen's 12 hours. These losses have a noticeable effect on the final ship and railcar processing results. A partial solution of the question has been found at the Tallinn and Ventspils Ports, where compilers, dockers and acceptance and transfer personnel are working under unified conditions.

The most important quality indicator among dockers is utilization of railcar body capacity to the upper permissible mark. Every brigade has its own virtuosos who are able to catch the moment when the loading norm is reached. Unfortunately, port workers do not have any measuring devices and they entirely

depend on their experience, intuition and... the objectivity of fellow transport workers who weigh the railcars. Riga transport workers are of the opinion that it is desirable to equip the station's scales with electronic attachments, which would provide the necessary information accurately and rapidly. Under present conditions, when an automated bulk cargo transshipment control system is being successfully used, electronic scales are not a luxury but a logical unit in the development of this progressive method.

Apparently, it is useful to heed such opinion. All the more so because the imperfection of weighing facilities is called the Achilles' heel of technology in other Baltic area ports as well. It is probably possible to carry out further modernization of track facilities, which would make it possible to eliminate the reweighing of dispatched trains.

The regional coordination council of transport workers on propagation of best work methods has not been operating energetically enough so far. At the intersectorial seminar, which was held in the latter part of last year in Ventspils, for example, it was stated that at the Kaliningrad Port there is experience of efficient loading of railcars which deserves attention and another one at the Tallinn transshipping center in using docker-machine operators as acceptance and transfer workers, who work by holding down two jobs. Unfortunately, neither experience has been disseminated to other Baltic area ports so far.

From the first days of the new year, a competition has developed in ports and stations for best operation of transport facilities and, in particular, maximum use of volume and carrying capacity of railcars. To dispatch more cargo with least quantity--this as before is the main reference point of all participants in the creative search, regardless of their departmental affiliation. The formula of their cooperation is in taking mutual interests into account, in understanding the value of accumulated experience and in implementing innovation initiatives in practice.

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PORTS AND TRANSSHIPMENT CENTERS

POOR CONDITION OF BERTHS RETARDS RIGA PORT OPERATIONS

Moscow VODNYY TRANSPORT in Russian 17 Jan 85 p 2

[Article by VODNYY TRANSPORT correspondent V. Lushchevskiy in the column "Capital Construction": "A Berth Begs for Protection"]

[Text] Whenever dispatchers of the Riga Maritime Port plan placing vessels for processing, their heads are in a whirl: there are not enough berths.

Some people may object: Is that so? Much has been written about the development and expansion of the port and about the birth on the banks of Daugava of shore structures and capacities for servicing the fleet. And suddenly--a shortage of berths.

Vistors, sightseers and reporters, who wish to familiarize themselves with everyday life of dockers, are eagerly shown the possessions of the new, third cargo region. It really does look impressive. Everything that one can rest one's gaze on gladdens the eye: it is all of large scale, modern and attractive.

But that which takes place literally adjacent to the unique complex, is not shown to visitors. No one has seen television or movie cameras rattling near veteran-berths Nos 16, 17 and 18 which are located in the territory of the first cargo region.

During the past several years, they have been operated especially intensively. and the constant loads could not but have an effect on their condition. Fender arrangements are collapsing, beams are breaking and components of hydraulic engineering structures are becoming exposed.

Let us remind you that the berthing facilities of this harbor were restored soon after the war. Since that time they have worked tirelessly, as they say, to exhaustion.

There is no planning whatsoever in the repair of the port's hydraulic engineering structures, and this is the main reason of their deplorable condition.

The "Regulations for Technical Operation of Port Structures and Water Areas" clearly describe the responsibility of maritime port supervisors for the condition of berths. Their repair, as the regulations state, must be planned and carried out precisely and systematically.

We have a right to address criticism for today's troubles at the Riga berths, first of all, to P. Mikhaylets, chief of the Department of Engineering and Hydraulic Engineering Structures. The berths were not brought to such condition in 1 day, it is a protracted illness.

Approximately 1 year ago, the Latvian Maritime Shipping Company issued an order, in which it noted substantial shortcomings in the organization of technical operation of hydraulic engineering structures in the Riga Maritime Port. It reflected the examination results of a qualified commission, and its conclusions were seriously alarming. It noted that capital repairs of berth No 17 were organized unsatisfactorily, that many other berths are in a similar condition and that their renovation is absolutely necessary.

But this order was poorly fulfilled. In 1984, only the sixteenth berth was accepted for repairs as part of the plan. The remaining installations are in poor condition as before, but are still being operated. For example, wooden berths Nos 3 and 4. Their piles have rotted to pieces long ago. Naturally, in solving the most acute problem with respect to the repair of berths, port workers cannot get along without the assistance of fellow transport workers of the department--the USSR Ministry of Transport Construction. It is the basic contractor. However, the Balttransstroy Trust [not further identified] has lately completely refused to accept any orders for repair of hydraulic engineering structures, and the Baltmorgidrostroy Trust [not further identified] is trying to avoid them by using every possible method. The volume of work, which is secured by contractual commitments for the current five-year plan, amounts to a meager share of that which is really needed by port workers.

The reason for such a cool attitude on the part of the contractor to the needs and pains of its closest partner is no secret: the trust is receiving all sorts of encouragement--prizes, awards and gratitudes--only for capital construction, and nothing for repairs. Moreover, materials for capital construction are allocated in an absolutely different proportion than for repair needs.

This creates for the customer, that is the port, constant difficulties in distributing work which is most important for it today. (Let us note in parentheses that exactly the same situation also exists with the repair of entrance moles).

Thus, the impossibility of getting a contractor for the repair of berths is a very serious cause of all troubles, which have now become typical for hydraulic engineering structures of the port on the Daugava.

There are other serious causes. Certainly, the owners of the berths themselves, on whom very much depends, are also to blame for the situation that has developed. It had often happened that a contractual organization would prepare everything to begin its work, but the berth was not removed from operation and the work could not begin.

"We can compare the attitude toward berths in two ports," A. Trenin, chief of the Development and Capital Construction Service of the Latvian Shipping

Company, said, "in the Riga and Ventspils Ports. Work conditions and possibilities for renovating the hydraulic engineering structures are approximately the same there. But work results are not the same and urgent technical and repair problems are solved in a different manner. In Ventspils they are able, despite all objective difficulties, to repair berthing facilities in a planned and systematic manner by seeking internal reserves in their own port... But one cannot say this about Riga..."

Finally there is another detail, which by no means is a minor one. For the renovation and repair of berths there is a constant need for metal sheet pile, which is being supplied extremely poorly for these needs. Riga is receiving no more than half of piles from the All-Union Mortekhsnab Association [not further identified]. The situation with other materials is the same.

While this correspondence was being prepared, the technical services of the shipping company have examined the state of affairs with the repairs of berths at the Riga Maritime Port and checked fulfillment of the extensive order by the chief of the LMP [Latvian Maritime Shipping Company], which was mentioned earlier. At their demand, attention was intensified with respect to those repair projects which are listed in the plan and necessary funds were allocated for materials. The situation has begun to move forward somewhat.

Overcoming the "shortage" of berths, which is being felt as before especially sharply in the first cargo region, depends on the owners themselves--the port workers. It cannot be done with half measures here. The old berths must serve reliably and faithfully.

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PORTS AND TRANSSHIPMENT CENTERS

LENA BASIN BERTHING CAPACITY LAGS BEHIND FLEET DEVELOPMENT

Moscow VODNYY TRANSPORT in Russian 19 Jan 85 p 2

[Article by VODNYY TRANSPORT correspondent B. Levin in the column "The Question Requires Solution": "In a Slipshod Manner"]

[Text] During the past several years, the rate of port berthing facilities development in the Lena basin has been noticeably lagging behind the rate of transport fleet development. The percent of underway time for dry cargo self-propelled vessels amounts to less than half of the operational period. The fleet loses a lion's share of time in processing ports.

The Lena United River Shipping Company is striving to eliminate the disproportion. During 4 years of the 11th Five-Year Plan, berth construction work was fulfilled in the Vilyuy group of rayons and in Kirensk, Olekminsk, Zyryanka, Nizhneyansk and Osetrovo. This year, it is planned to begin construction of the second stage of the Yakutsk Port.

However, efforts of one shipping company are obviously not enough. It is necessary that consignees and consignors also participate in the construction of mechanized berths in the basin. Alas, they are regarding this obligation in a slipshod manner. Tasks for construction and expansion of berths are chronically not fulfilled by the Yakutalmaz, Yakutglavsnab, Goskomnefteprodukt and Promstroymaterialy associations [not further identified]. Hardly a single consignor of lumber products has mechanized berths in the basin. The Yakutmezhsovkhozstroy [not further identified] and the Tabaginskiy Timber Combine have removed themselves from solving this most important problem.

This has led to the fact that above-plan layovers of the fleet at customers' berths during the past navigation season have amounted to 3.8 million tonnage-days. This reserve could have been used for transporting 150,000 t of general cargo from Osetrovo to Yakutsk.

A particularly alarming situation has developed during the past navigation season at the Lensk Port, which is a structural subdivision of the Yakutalmaz association. The layover of vessels at its berths last year has accounted for 60.5 percent of all above-plan layovers. The prospects for improving work in Lensk are far from rosy in the upcoming navigation season as well. This year, the LORP [Lena United River Shipping Company] plans to assign the fleet to

haul general cargo from Osetrovo to Lensk, but it will be difficult to achieve the necessary results without radical improvement of vessel processing in port. It seems that there is something to think about in the USSR Ministry of Nonferrous Metallurgy and in other interested departments and organizations.

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PORTS AND TRANSSHIPMENT CENTERS

SOVIET-ITALIAN SYMPOSIUM ON PORT BUILDING COOPERATION

Moscow VODNYY TRANSPORT in Russian 12 Jan 85 p 1

[Article by A. Kashtanov: "A Maritime Port in the Long Term"]

[Text] A symposium was held at the Moscow representative's office of the Italian-Soviet Chamber of Commerce on the topic "The Long Term in Maritime Port Building."

Participating in it were scientists and chief specialists of various subdivisions of the national economy of the Soviet Union. They familiarized themselves with the work experience of the Italian (Politekna Harris) Joint-Stock Company, which is located in Milan.

Supervisors of the company's departments, in particular, described to those present their new, progressive maritime port projects and the only commercial port of its kind in Manfredonia, which has received a prize for excellent engineering design of the New York Association of Consulting Engineers. This port has an overall area of 25-30 ha; a breakwater on steel piles with template facing is linked with the mainland by a pier with a road fit for traffic which is 2.2 km long. The port's annual turnover reaches 400,000-500,000 t.

One of the latest (Politekna Harris) projects is Pozzallo Maritime Port Sicily, whose planned cargo turnover is up to 1 million t a year.

Let us note that since 1977 the Italian (Politekna Harris) Joint-Stock Company has been developing scientific and technical cooperation with foreign trade and industrial associations of the USSR, manifesting great interest in the development of various joint technical projects.

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